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14. ABSTRACT

SupportNet aims to assess the level of secondary trauma and job burnout among military behavioral health providers and to provide a pilot support system for providers working at with military trauma survivors. In the second year of the project, we completed the initial survey and data analysis of behavioral health providers and have designed the internet and in-person portions of the intervention.

Secondary trauma is a serious issue and occurs when caretakers are continually exposed to extensive traumatic material on an on-going basis. Symptoms of secondary trauma are similar to Posttraumatic Stress Disorder and can influence ability to engage in the therapeutic process with clients, irritability, and emotional numbing. Secondary traumatization may also lead to severe burnout and turnover.

15. SUBJECT TERMS
Secondary traumatic stress, compassion fatigue, job stress, burnout, behavioral health providers, combat trauma.

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BODY:

The following are the three objectives for the SupportNet project. These are provided here to reference the objective(s) supported by the accomplishment for each of the Research and Project Management Accomplishments listed.

Objective 1: We will conduct an initial needs assessment to determine the level of secondary trauma and burnout in military mental health providers from U.S. Army Posts around the country in order to establish prevalence rates for secondary trauma, burnout, and compassion fatigue in military mental health providers.

Objective 2: We will evaluate the utility of social cognitive theory as a framework for understanding the stress process for military mental health providers by using a quantitative evaluation of coping self-efficacy to predict negative outcomes for military mental health providers.

Objective 3: We will develop and evaluate a theoretically based support system called SupportNet to empower behavioral health providers in developing critical self-assessment skills, self-regulatory abilities, and support seeking capacities and will test the system's effectiveness by completing a randomized controlled trial and a program and process evaluation.

Research accomplishments

a) We completed developing the SupportNet website (Objective 3).
b) We started a randomized controlled trial (RCT) to test the effectiveness of SupportNet, in October, 2013 (Objective 3).
c) We authored a research paper on the development of the Secondary Trauma Self-Efficacy Scale, published in Psychological Assessment (Impact Factor: 2.993) in September, 2013. The paper presents a new method that had to be created to assess a key resilience component important in coping with the effects of indirect exposure to trauma (Objective 2).
    a. Cieslak, R., Shoji, K., Luszczynska, A., Taylor, S., Rogala, A., & Benight, C. C. (2013). Secondary Trauma Self-Efficacy: Concept and Its Measurement. *Psychological Assessment, 25,* 917-928. doi: 10.1037/a0032687 (Appendix I)
d) We published a paper on the prevalence of secondary trauma among behavioral health providers working with military personnel in November, 2013 in the Journal of Nervous and Mental Disease (Impact Factor: 1.842). The prevalence of secondary traumatic stress among 224 behavioral health practitioners working with the military-related trauma was 19.2%. Personal history of trauma, complaints about having too many patients, and more negative appraisals of the impact caused by an indirect exposure to trauma were associated with higher frequency of secondary traumatic stress symptoms. A meta-analysis of existing studies showed the severity of intrusion, avoidance, and arousal symptoms of secondary traumatic stress was similar across various groups of professionals indirectly exposed to trauma (e.g., mental health providers, rescue workers, social workers) (Objectives 1 & 2).
    a. Cieslak, R., Anderson, V., Bock, J., Moore, B. A., Peterson, A. L. & Benight, C. C. (2013). Secondary traumatic stress among mental health providers working with the military: Prevalence and its work- and exposure-related correlates. *Journal of Nervous and Mental Disease, 201,* 917-925. doi: 10.1097/NMD. 0000000000000034 (Appendix II)

e) A meta-analytic paper on the relationship between secondary traumatic stress and job burnout was published in a special section for Secondary Trauma and Burnout in Psychological Services (Impact Factor: 1.075) in February, 2014. Our systematic review of the literature yielded 41 original studies, reporting data from 8,256 workers. The meta-analysis indicated the association between job burnout and secondary traumatic stress was strong (weighted r = .69) (Objective 1).
    a. Cieslak, R., Shoji, K., Douglas, A., Melville, E., Luszczynska, A., & Benight, C. C. (2014). A meta-analysis of the relationship between job burnout and secondary traumatic stress among workers with indirect exposure to trauma. *Psychological Services, 11,* 75-86. doi:10.1037/a0033798 (Appendix III)
f) We authored a paper on the mediating role of social support and secondary traumatic self-efficacy in the relationship between secondary traumatic stress and secondary traumatic growth, which was published online in Journal of Clinical Psychology (Appendix IV) in January, 2014. This study tested two alternative hypotheses involving social support and self-efficacy as mediators in a longitudinal design. This paper consisted of 2 studies involving 115 military behavioral healthcare providers in the U.S. and 189 workers exposed to secondary trauma who completed both Time 1 and Time 2 online surveys. In both studies, results supported a cultivation hypothesis, which posits that self-efficacy enhances social support, which further facilitates secondary traumatic growth in the long term (Objective 2).
    a. Shoji, K. Bock, J., Cieslak, R., Zukowska, K, Luszczynska, A., & Benight, C. C. (2014). Cultivating secondary traumatic growth among healthcare workers: The role of social support and self-efficacy. *Journal of Clinical Psychology.* Online advanced publication. (Appendix IV).
g) A meta-analytic paper on the relationship between job burnout and self-efficacy was submitted to *Anxiety, Stress, and Coping*. Our systematic literature search found 53 original studies meeting inclusion and evaluation criteria. Preliminary results show there is a moderate association between job burnout and self-efficacy. Our tests of moderation are underway (Objectives 1 & 2).
    a. Shoji, K., Cieslak, R., Smoktunowicz, E., Rogala, A., K, Luszczynska, A., & Benight, C. C. (2014). Association between job burnout and self-efficacy: A meta-analysis. *Manuscript under review.*
h) We presented a paper on a meta-analysis of the relationship between secondary traumatic stress and job burnout, at the European Society for Traumatic Stress Studies in June, 2013 in Bologna, Italy (Objective 1).
    a. Cieslak, R., Shoji, K., Benight, C. C., & Luszczynska, A. (June, 2013). The relationship between secondary traumatic stress and job burnout: A meta-analysis (Appendix V).
i) We presented a poster on the development and validation of a secondary trauma self-efficacy scale at the European Health Psychology Society Annual Conference in July, 2013 in Bordeaux, France (Objective 2).
    a. Rogala, A., Cieslak, R., Shoji, K., Luszczynska, K., Taylor, S., & Benight, C. C. (July, 2013). Secondary trauma self-efficacy scale: Psychometric evaluation (Appendix VI).
j) A book chapter on job burnout was published in a book dedicated to military psychologists, in July, 2013 (Objective 1).

a. Benight, C.C & Cieslak, R. (2013). Professional Burnout. In B. A. Moore & J. E. Barnett (Eds.). *Military Psychologists' Desk Reference*. New York: Oxford University Press. (Appendix VII) http://global.oup.com/academic/product/military-psychologists-desk-reference-9780199928262?q=Military Psychologists' Desk Reference&lang=en&cc=

k) We presented two posters at the APA Annual Conference in August, 2013 in Honolulu, Hawaii. (Objective 1 & 2).
   a. Bock, J., Shoji, K., Cieslak, R., & Benight, C. C. (August, 2013) Effects of social support and self-efficacy on secondary traumatic growth (Appendix VIII).
   b. Shoji, K., Luther, E., Cieslak, R., Smoktunowicz, E., & Benight, C. C. (August, 2013) Indirect effect of job burnout on job engagement (Appendix IX).

l) We presented a paper at the Scientific Conference of the Australian Society for Behavioural Health and Medicine Annual Conference in February, 2014 in Auckland, New Zealand (Objective 1 & 2).
   a. Cieslak, R., Shoji, K., Rogala, A., Smoktunowitz, E., & Benight, C. C. (February, A meta-analysis of the relationship between self-efficacy and job burnout (Appendix X).

m) Our submitted poster presentation was accepted for the Medicine 2.0 Annual Conference in November, 2014 in Maui, Hawaii (Objective 3).
   a. Shoji, K., Gibson, F., Cieslak, R., Anderson, V., Bock, J., Decker, L., Yeager, C., & Benight, C. C. (November, 2014). SupportNet: Preliminary results of a randomized controlled trial (Appendix XI).

n) We submitted a poster presentation for the International Society for Research on Internet Intervention Annual Conference in October, 2014 in Valencia, Spain (Objective 3).
   a. Shoji, K., Yeager, C., Gibson, F., Cieslak, R., Bock, J., Decker, L., Anderson, V., & Benight, C. C. (October, 2014). SupportNet for military behavioral healthcare providers: Website engagement and job burnout (Appendix XII).

o) We submitted two poster presentations for the International Society for Traumatic Stress Studies Annual Conference in November, 2014 in Miami, Florida (Objective 2).
   a. Luther, E., Yeager, C., Shoji, K., Gibson, F., Bock, J., Bhalla, A., Durham, R., & Benight, C. C. (November, 2014). The relationship between web intervention engagement and job burnout: A moderated-mediation model using technology readiness and job burnout self-efficacy (Appendix XIII).
   b. Boesdorfer, G., Nocoles, C., Shoji, K., Benight, C. C., & Gibson, F. (November, 2014). Effects of sexual assault history on the relationship between secondary traumatic stress, job burnout self-efficacy, and burnout for military mental health providers (Appendix XIV).

p) We presented a paper at the annual conference of the International Society for Traumatic Stress Studies in November 2013 in Philadelphia, PA.
   a. Benight, C. C., Cieslak, R., Anderson, V., Moore, B., & Peterson, A. (2013, November). Secondary Traumatic Stress among Army Mental Health Providers: Prevalence and its Work- and Exposure- Related Correlates. (Appendix XVI).

q) The next research publication, which is underway, addresses the directionality of the relationship between job burnout and secondary traumatic stress. We are evaluating whether job burnout leads to development of secondary traumatic stress, or secondary

traumatic stress leads to development of job burnout. The results have important implications- Preliminary results indicated having high levels of job burnout at Time 1 lead to secondary traumatic stress at Time 2 (6 months later). However, high levels of secondary traumatic stress at Time 1 do not appear to affect the development of job burnout at Time 2.

r) Another research publication underway involves exploration of a possible nonlinear indirect effect of job burnout self-efficacy in the relationship between occupational constraints and job burnout. Preliminary results show occupational constraints have a logarithmic relationship with job burnout self-efficacy, and job burnout self-efficacy has an exponential relationship with job burnout. These results have important clinical and theoretical implications.

s) We have begun a book based on the research findings and lessons learned from the SupportNet initiative designed for key stakeholders (e.g., directors of behavioral health, military mental health providers, occupational health providers, hospital commanders, etc.). Tentatively titled, "After the Battlefield: Secondary Trauma and Burnout in Military Mental Health Providers", the work will cover what we have learned in the process of completing this project, including the important implications of our prevalence findings, challenges associated with our web intervention, conducting our Clinical Trial, and our RCT outcomes.

t) Our external program evaluator completed an internal qualitative process evaluation of the SupportNet team, and a final quantitative process and outcome evaluation. (Objective 3). (Appendix XV).
    a. Bhalla, B.A., Teel, M., & Durham R. (2014) *Process and outcome evaluation for SupportNet.* Unpublished manuscript. University of Colorado Colorado Springs, Colorado Springs, CO.

Intervention design and development accomplishments

a) None. The SupportNet intervention, including the online platform and coaching model, were completed by the time of submission of the 2013 Annual Report.

Project management accomplishments

a) We extended the SupportNet clinical trial to include Licensed Clinical Social Workers at Ft Carson. We did so to accommodate these individuals and to buttress the statistical power in our study.

Recommended Changes and Future Work

One area for future work the SupportNet Research Team is now exploring with officials from Ft. Carson. Given the absence of empirical studies on Secondary Traumatic Stress and job burnout in military nurses, and no randomized control trial data available on the evaluation of interventions for secondary trauma and burnout in military nurses, we have proposed to extend SupportNet work to military nurses using the information gained from our SupportNet project. This project is labelled MedNet and the proposal was submitted to TATRC. Preliminary results of the SupportNet Randomized Controlled Trial (RCT) suggest a significant positive effect for

the coaching/internet platform tandem in reducing burnout when compared to waitlist control or internet-only control conditions. These are promising results, but we need to assess the robustness and generalizability of this effect. The primary focus of MedNet will be a logical extension of the SupportNet work to military nurses. Our discoveries in the SupportNet RCT will also allow us to make improvements in the coaching model and online platform, which we hope to demonstrate in this follow-on project. Our specific MedNet aims include:

1. Conduct a longitudinal theoretically-based prevalence study of job burnout and secondary traumatic stress among active duty and GS civilian nurses working at the 11 facilities in the Southern Regional Medical Command (SRMC) and Evans Army Community Hospital (EACH), Fort Carson, Colorado.
2. Conduct a randomized clinical trial of active duty and GS civilian nurses testing MedNet, the SupportNet intervention adapted for nurses.
3. Transfer technology and other intervention components to stakeholder organizations to facilitate commercialization and dissemination to other military and civilian nurses.

We are also negotiating with TESSA, a local domestic violence NGO, to explore the options of working with them in a service-oriented capacity leveraging the SupportNet coaching/internet intervention. TESSA's mission is to help women and their children achieve safety and wellbeing while challenging communities to end sexual and family violence. In the process, TESSA sees a significant number of military clients. Our vision is to leverage the THHC Team's expertise and our learnings from the SupportNet research in a community outreach venue, to help TESSA victim advocates deal with their mission-related health challenges.

KEY RESEARCH ACCOMPLISHMENTS:

a) We initiated the Randomized Controlled Trial, and began the process of collecting data. We project completion of this phase of the research around November 2014. Appendix XVII displays the CONSORT Chart for SupportNet, which summarizes the flow of the RCT to this point, not including three LCSW participants from Ft. Carson who have yet to actively engage in the Trial.

b) Research papers authored:

   a. Professional Burnout (Book Chapter)

   b. Indirect effect of job burnout on job engagement (Poster)

   c. A meta-analysis of the relationship between self-efficacy and job burnout

   d. SupportNet: Preliminary results of a randomized controlled trial (Poster)

   e. SupportNet for military behavioral healthcare providers: Website engagement and job burnout (Poster)

   f. The relationship between web intervention engagement and job burnout: A moderated-mediation model using technology readiness and job burnout self-efficacy (Poster)

   g. Effects of sexual assault history on the relationship between secondary traumatic stress, job burnout self-efficacy, and burnout for military mental health providers (Poster)

REPORTABLE OUTCOMES:

Published and Accepted Papers and Abstracts.

Cieslak, R., Shoji, K., Luszczynska, A., Taylor, S., Rogala, A., & Benight, C. C. (2013, May 6). Secondary Trauma Self-Efficacy: Concept and Its Measurement. *Psychological Assessment*. Advance online publication. doi: 10.1037/a0032687 (Appendix I)

Cieslak, R., Anderson, V., Bock, J., Moore, B. A., & Peterson, A. L. & Benight, C. C (2013). Secondary traumatic stress among mental health providers working with the military: Prevalence and its work- and exposure-related correlates. Accepted for publication. (Appendix II)

Cieslak, R., Shoji, K., Douglas, A., Melville, E., Luszczynska, A., & Benight, C. C. (2013). A meta-analysis of the relationship between job burnout and secondary traumatic stress among workers with indirect exposure to trauma. Accepted for Publication. (Appendix III)

Benight, C.C & Cieslak, R. (2013). Professional Burnout. In B. A. Moore & J. E. Barnett (Eds.). *Military Psychologists' Desk Reference*. New York: Oxford University Press. (Appendix VI)
http://global.oup.com/academic/product/military-psychologists-desk-reference-9780199928262?q=Military Psychologists' Desk Reference&lang=en&cc=

Bock, J., Shoji, K., Cieslak, R., & Benight, C. C. (2013). Effects of Social Support and Self-efficacy on Secondary Traumatic Growth. Accepted for presentation at the American Psychological Association Annual Meeting.

Shoji, K., Luther, E., Cieslak, R., Smoktunowicz, E., & Benight, C. C. (2013). Indirect Effect of Job Burnout on Job Engagement. Accepted for presentation at the American Psychological Association Annual Meeting.

Clinton, M., Benight, C. C., Cieslak, R., Bock, J., & Anderson, V. (2012). The Regressive Coping Scale: Evaluating the Risk Factors for Job Burnout. Poster presented at the 28th annual conference of the International Society for Traumatic Stress Studies. Los Angeles, CA.

Funding Applications
We submitted two grant proposals this past year related to SupportNet research. The first, MedNet, was described above.

The second, FireNet, aims to understand the scope of the behavioral health risks to Wildland Firefighters (WFFERS), and provide innovative interventions to mitigate the problems. Posttraumatic stress prevalence among firefighters exposed to natural disasters has been estimated at 17.2%. However, little is known about the prevalence of these issues in WFFERs nor the psychological mechanisms underlying these negative behavioral consequences. Even less

is known about how to address the behavioral health consequences of the unique WFFER occupation. To bridge the gap, we proposed a 3-part initiative: 1) a prevalence study to investigate WFFER culture, stress / trauma and job burnout, and the mechanisms relating these factors to critical work outcomes like turnover intent; 2) an exploratory study examining the feasibility of conducting a behavioral health intervention with WFFERs designed to manage unique "cultural" barriers and enhance WFFER overall wellness; and 3) a dissemination phase, incorporating publishing study findings and institution-wide implementation of a Social Norms Marketing Campaign.

FireNet capitalizes on a unique collaboration that brings together the scientific and clinical expertise of the Trauma, Health, and Hazards Center at the University of Colorado Colorado Springs with partners from CAL FIRE and the U.S. Fire Service (USFS). This combination offers a scientifically solid and feasible approach to generate critical new knowledge and intervention support to this population. Year 1 will uncover the prevalence of behavioral health consequences associated with WFFER occupational demands. Specific Aims of FireNet include:

1. Determine the prevalence of posttraumatic stress, job burnout, quality of life, alcohol use, and turnover intent among WFFERs, as well as their perceived organizational resources and demands.
2. Evaluate the effectiveness of the FireNet intervention among WFFERs, complemented by a Social Norms campaign to challenge existing WFFER culture limiting help-seeking.

CONCLUSION:

The third year of SupportNet was productive. We made progress toward completing Objectives 2 and 3 of this research (Objective 1 having already been met).

We published 5 primary publications and a book chapter that address Objectives 2 and 3.

We produced 7 posters accepted for presentation at several national and international professional meetings, and presented a paper on our work.

We submitted a request for future funding to extend this work for an additional year.

We are progressing on about 2 other papers and a book this year and are investigating future grant opportunities.

APPENDICES:

Appendix I: Paper: Secondary Trauma Self-Efficacy: Concept and Its Measurement

Psychological Assessment
2013, Vol. 25, No. 3, 917-928

1040-3590/13/$12.00 DOI: 10.1037/a0032687

Secondary Trauma Self-Efficacy: Concept and Its Measurement

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The Secondary Trauma Self-Efficacy (STSE) Scale was developed and psychometrically evaluated in 2 studies targeting populations indirectly exposed to traumatic events through work with traumatized clients. Study 1 enrolled behavioral health professionals ($n = 247$) providing trauma therapy for military clients in the United States. Study 2 investigated characteristics of the STSE Scale among health care and social workers ($n_{T1} = 306$, $n_{T2} = 193$) providing services for trauma victims and survivors in Poland. Rooted in social cognitive theory, the 7-item STSE Scale is used to evaluate perceived ability to cope with the challenging demands resulting from work with traumatized clients and perceived ability to deal with the secondary traumatic stress symptoms. In both studies, exploratory and confirmatory factor analysis showed unidimensionality of the scale. The results indicated good internal consistency of the STSE Scale and its stability over time. STSE correlated highly or moderately with secondary traumatic stress symptoms. Comparatively, associations between STSE and perceived social support, secondary traumatic growth, and negative beliefs about the world and self were either moderate or low. The STSE factor structure and pattern of correlations with the validity measures were invariant across the 2 studies, which indicated that the STSE Scale may be a culturally unbiased instrument.

Keywords: secondary traumatic stress, self-efficacy, measurement validity, measurement reliability

Secondary exposure to trauma refers to the widespread phenomenon of indirect exposure to different types of traumatic material, such as contacts with people who have experienced traumatic events, exposure to graphic trauma content (e.g., reported by the survivor), exposure to people's cruelty to one another, and observation of and participation in traumatic reenactments (Pearlman & Saakvitne, 1995). Indirect exposure may be an inherent characteristic of occupations such as mental health, health care, and social work, which involve providing clinical services to traumatized populations (Elwood, Mott, Lohr, & Galovski, 2011). Although indirect (also referred to as *secondary* or *vicarious*) exposure to trauma through work might have a positive effect on service providers' posttraumatic growth (Brockhouse, Msetfi, Cohen, & Joseph, 2011), research suggests that indirect exposure is related to

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higher levels of distress (Pearlman & MacIan, 1995), negative cognitions or low levels of self-trust (Pearlman & MacIan, 1995), and secondary traumatic stress (Elwood et al., 2011).

Secondary traumatic stress is one of the most often investigated negative consequences of indirect exposure to trauma. Although there are many definitions of *secondary traumatic stress*, in this article it is defined as reactions resembling posttraumatic stress, such as intrusive re-experiencing of the traumatic material, avoidance of trauma triggers, and emotions and increased arousal, all resulting from indirect exposure to trauma (Bride, Robinson, Yegidis, & Figley, 2004). Prevalence of secondary traumatic stress varies from 15.2% among social workers (Bride, 2007), 16.3% in oncology staff (Quinal, Harford, & Rutledge, 2009), 19% in substance abuse counselors (Bride, Hatcher, & Humble, 2009), 32.8% in emergency nurses (Dominguez-Gomez & Rutledge, 2009), 34% in child protective services workers (Bride, Jones, & MacMaster, 2007), to 39% in juvenile justice education workers (Hatcher, Bride, Oh, King, & Catrett, 2011).

Self-Efficacy as a Protective Factor

In response to the common secondary traumatization exposure and its consequences among several occupational groups, researchers and professionals have advocated for testing protective factors (Elwood et al., 2011; Tyson, 2007). Some individual protective characteristics, such as years of experience as a clinician (Voss Horrell, Holohan, Didion, & Vance, 2011), may be hard to modify. The effectiveness of self-care activities (e.g., leisure time) in reduction or prevention of distress and secondary traumatic stress symptoms is limited (Bober & Regehr, 2006). In contrast, trauma-related cognitions, such as self-efficacy, are modifiable factors that may contribute to posttraumatic adaptation (Ehlers & Clark, 2000).

Self-efficacy is among the cognitions that may be seen as a proximal determinant of health-related outcomes after a traumatic event (Benight & Bandura, 2004). According to social cognitive theory (SCT), self-efficacy mirrors a sense of control over environment and refers to the perceived ability to master challenging demands (such as major stressful events and their aftermath) by means of adaptive actions (Bandura, 1997). Self-efficacy makes a difference in how people feel, think, and act (Bandura, 1997). Recent SCT developments suggest that beliefs about one's own abilities to cope help in overcoming difficulties arising after exposure to a traumatic event (Benight & Bandura, 2004). A systematic review confirmed large significant negative associations between self-efficacy and negative consequences of traumatization, such as posttraumatic stress disorder (PTSD; Luszczynska, Benight, & Cieslak, 2009).

Secondary Trauma Self-Efficacy

Although multiple studies have shown that self-efficacy explains posttraumatic adaptation (cf. Luszczynska et al., 2009) and several measures to assess self-efficacy among trauma survivors have been developed (e.g., Hyre et al., 2008; Lambert, Benight, Harrison, & Cieslak, 2012), we found very few studies investigating self-efficacy or other positive cognitions in the context of secondary exposure to trauma and its consequences. We identified only three studies testing for self-efficacy and health outcomes of secondary trauma exposure.

Among professionals who are at risk for vicarious exposure, self-efficacy is associated with better quality of life (Prati, Pietrantoni, & Cicognani, 2010), less compassion fatigue (Ortlepp & Friedman, 2002) and lower levels of secondary traumatic stress (Bonach & Heckert, 2012). It is important to note that those studies assessed work-related self-efficacy, referring to perceptions of training efficiency and perceptions of personal effectiveness at work (Bonach & Heckert, 2012; Ortlepp & Friedman, 2002), or assessed general perceptions of the capability to face various challenges at work (Prati et al., 2010). This work-related approach to measure self-efficacy may be an optimal choice to investigate associations between aggravated job stress levels among workers and global consequences of stress (e.g., quality of life, general distress). In contrast, exploring the role of self-efficacy beliefs in the context of secondary trauma exposure and its potential consequences requires evaluating beliefs about the capability to cope with thoughts and feelings related to secondary trauma exposure. As SCT suggests, contexts of self-efficacy should match the specificity of the environment (e.g., types of stressors) and the outcomes. Such an approach is also in line with the optimal matching hypothesis (Cutrona, 1990), indicating the need for testing the role of social cognitive mediators that match the type of stressor and stress outcomes. Therefore, *secondary trauma self-efficacy* (STSE) is defined in this article as perceived ability to cope with the challenging demands resulting from work with traumatized clients and perceived ability to deal with the secondary traumatic stress symptoms.

Aim of the Study

A lack of knowledge about the relationships between self-efficacy and outcomes of secondary trauma exposure among clinical service providers may be due to the fact that no existing measure of self-efficacy is available to assess these relationships. To fill this void, we evaluated the psychometric properties of a newly developed measure of secondary trauma self-efficacy. It was hypothesized that the STSE Scale would have a unidimensional structure, similar to other measures of self-efficacy (e.g., Hyre et al., 2008; Schwarzer & Jerusalem, 1995). In evaluating the congruent validity of the STSE Scale, we expected that STSE would be moderately or strongly associated with secondary traumatic stress symptoms. As for the discriminant validity, we hypothesized that there would be low to moderate correlations between STSE and other secondary trauma-related cognitions, such as (a) perceived social support, (b) negative cognitions about self and the world, and (c) secondary traumatic growth.

Theory and research suggest that self-efficacy relates to other cognitions and social resources that predict health-related outcomes (Benight & Bandura, 2004). Self-efficacy may be enhanced by social support, or it may affect social support seeking, thus, indirectly predicting health-related outcomes (cf. enabling and cultivation hypotheses; Schwarzer & Knoll, 2007). Therefore, the association between STSE and perceived social support would be expected.

Further, most prominent theoretical frameworks explaining PTSD symptoms (e.g., emotional processing theory; Foa & Rothbaum, 1998) assume that negative cognitions about self and the world are key cognitive determinants of the outcomes of the exposure to traumatic stress. However, research has indi-

cated that these negative cognitions operate through other trauma-specific cognitions, such as self-efficacy (Cieslak, Benight, & Lehman, 2008). Therefore, secondary trauma self-efficacy might also be correlated with negative cognitions about self and the world resulting from the indirect exposure to trauma.

Social cognitive theory also implies that strong self-efficacy may enable individuals to identify important opportunities to promote individual growth (Bandura, 1997; Benight & Bandura, 2004). Perceiving positive changes resulting from a struggle with traumatic events and their consequences (Calhoun & Tedeschi, 2006) may represent a positive outcome of posttraumatic adaptation. Perceived posttraumatic growth may be influenced by self-efficacy. In particular, functional outcomes such as perceived growth may develop if survivors start to actively deal with posttraumatic adversities (Zoellner & Maercker, 2006). Such changes and individual growth may occur after secondary trauma (Arnold, Calhoun, Tedeschi, & Cann, 2005). Therefore, it was hypothesized that secondary traumatic growth would be associated with STSE.

Study 1

Method

Participants. The study was part of a larger project investigating secondary trauma, work-related demands, and resources among mental health care providers working with returning soldiers in the United States. Inclusion criteria for the present study were (a) working at least 1 year as a clinical psychologist, counselor, or social worker; (b) providing services for a military population; and (c) being indirectly exposed to trauma through interaction with patients. Of 312 individuals who responded to any of the items on the STSE Scale, 247 participants (82 men, 33.2%) were qualified for the present study based on the previously described inclusion criteria.

Table 1 displays demographic information of the sample. On average, participants were 48.59 years old (SD = 13.02). The sample consisted of clinical psychologists (47.0%), counselors or psychotherapists (29.6%), and social workers (23.5%). Participants experienced indirect exposure to different types of traumatic

Table 1
Descriptive Statistics for Study 1 and Study 2: Demographics, Means, and Standard Deviations

Variable	Study 1 (n = 247)		Study 2, T1 (n = 306)		Study 2, T2 (n = 193)	
	M (SD)	% (n)	M (SD)	% (n)	M (SD)	% (n)
Demographic characteristics						
Age (years)	48.59 (13.02)		35.41 (8.59)		35.05 (8.10)	
Gender						
Female		66.8 (165)		75.8 (232)		79.3 (153)
Male		33.2 (82)		23.2 (71)		19.2 (37)
Intimate relationship						
Long-term relationship		75.7 (187)		73.9 (226)		77.2 (149)
Not in a relationship		22.3 (55)		25.5 (78)		22.3 (43)
Highest academic degree						
High school		—		20.6 (63)		18.1 (35)
Associate's degree		4.0 (1)		—		—
Bachelor's degree		4.0 (1)		21.2 (65)		19.7 (38)
Master's degree		44.5 (110)		56.5 (173)		60.6 (147)
Doctorate degree		54.7 (135)		1.0 (3)		0.58 (1)
Profession						
Clinical psychologists		47.0 (116)		—		—
Health care providers		—		48.4 (148)		45.6 (88)
Social workers		23.5 (58)		37.6 (115)		40.9 (79)
Counselors		29.6 (73)		—		—
Other		—		12.3 (38)		11.9 (23)
Measures						
Perceived social support						
Total	5.78 (1.04)		5.01 (1.50)		—	
From family	5.63 (1.30)		4.86 (1.71)		—	
From friend	5.70 (1.20)		4.94 (1.57)		—	
From significant other	6.02 (1.27)		5.23 (1.67)		—	
Negative cognitions						
About world	3.08 (1.24)		—		—	
About self	1.50 (0.68)		—		—	
Secondary traumatic growth	2.36 (1.28)		2.88 (1.08)		—	
Secondary trauma self-efficacy	6.15 (0.72)		5.21 (0.93)		5.28 (0.93)	
Secondary traumatic stress						
Total	1.86 (0.61)		2.31 (0.64)		—	
Intrusion	1.77 (0.58)		2.55 (0.74)		—	
Avoidance	1.89 (0.71)		2.14 (0.65)		—	
Arousal	1.92 (0.71)		2.33 (0.81)		—	

Note. Percentages may not add up to 100% due to missing data. T1/T2 = Time 1/Time 2.

events, including, for example, military combat (89.1%), physical assaults (83.6%), motor vehicle accidents (82.6%), and natural disasters (68.0%). Additionally, all participants were also directly exposed to a traumatic event, with the average number of three traumatic events reported per person ($M = 3.26$, $SD = 1.84$).

Measures. Participants completed a set of questionnaires evaluating secondary trauma self-efficacy, secondary exposure to trauma, and measures used for the validity assessment.

Secondary trauma self-efficacy. The items of Secondary Trauma Self-Efficacy (STSE) Scale were developed in three steps. First, three experimenters (licensed psychologists specializing in secondary trauma issues) conducted structured interviews with 30 behavioral health providers exposed to secondary traumatic stress. The interviews aimed at investigating the beliefs about the ability to deal with work-related secondary exposure. Later, the experimenters screened the measures originally designed to assess perceived ability to cope with demands resulting from the exposure to trauma and perceived ability to deal with PTSD symptoms (Cieslak et al., 2008; Hyre et al., 2008; Lambert et al., 2012). They independently selected up to 12 items, reflecting the self-efficacy statements elicited in the interviews. Seven items were selected by all three experimenters and included in the STSE Scale. The respective items were modified to measure self-efficacy cognitions in the context of indirect exposure to trauma through work with traumatized individuals. In the next step, the experimenters independently screened the interview records for recurring self-efficacy statements that were not covered by the seven items selected in the previous step. Two additional self-efficacy statements were identified using the consensus method and were added to the STSE Scale.

The preliminary version of the STSE Scale consisted of nine items beginning with the same stem phrase "How capable am I to . . ." followed by the nine items. Participants were asked to relate these items to their "work with people experiencing extreme or traumatic events." The content of the scale is presented in Figure 1. The responses were given on a 7-point Likert-like scale, ranging from 1 (*very incapable*) to 7 (*very capable*).

Secondary trauma exposure. The Secondary Trauma Exposure Scale was developed for the present study to measure indirect exposure to traumatic events (Cieslak et al., in press). It consists of a list of 10 potentially traumatic events, including natural disasters, motor vehicle accidents, other serious accidents, physical assaults, sexual assaults, other life-threatening crimes, military combat or exposure to a warzone, life-threatening illness or injury, sudden

Secondary Trauma Self-Efficacy Scale

For each situation described below, please rate how capable you are to deal with thoughts or feelings that occur (or may occur) as the result of your work with people experiencing extreme or traumatic events.

Please rate each situation as you CURRENTLY believe.

Very incapable	Incapable	Somewhat incapable	Neither incapable nor capable	Somewhat capable	Capable	Very capable
1	2	3	4	5	6	7

"How capable am I to ..."

_____Deal with my emotions (anger, sadness, depression, anxiety) about working with these people.

_____Find some meaning in what had happened to these people.

_____Control recurring distressing thoughts or images about these people.

_____Deal with thoughts that similar things may happen to me.

_____Be supportive to others after my experiences with these people.

_____Cope with thoughts that I can't handle working these with people anymore.

_____Get help from others to better handle working with these people.

Figure 1. Secondary Trauma Self-Efficacy Scale. Original item numbers were 1, 3, 4, 5, 7, 8, and 9. Two excluded items were "Deal with the impact these people have had on my life" (Item 2) and "Keep emotional balance after realizing what had happened to these people" (Item 6).

death of someone close, and other. Participants indicated whether they had been exposed to each traumatic event with a *Yes*-or-*No* format. Additionally, they indicated how many of these potentially traumatic events they had personally experienced.

Secondary traumatic stress. The Secondary Traumatic Stress Scale (STSS; Bride, et al., 2004) is a 17-item questionnaire that measures frequency of secondary traumatic stress symptoms in the previous month. It consists of five items for the Intrusion subscale, seven items for the Avoidance subscale, and five items for the Arousal subscale. Participants were instructed to evaluate the frequency of each symptom in the relation to their work with trauma-exposed clients. A 5-point Likert-like scale was used, ranging from 1 (*never*) to 5 (*very often*). Cronbach's alphas for the present study were .94 for the total score, .81 for the Intrusion subscale, .87 for the Avoidance subscale, and .85 for the Arousal subscale.

Perceived social support. The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) measures the availability of social support with 12 items. The instruction was adjusted to refer to difficulties occurring at work. The MSPSS consists of four items for the Family subscale, four items for the Friend subscale, and four items for the Significant Other subscale. Participants rated the degree of agreement for each item on a 7-point Likert-like scale, ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Cronbach's alphas for the present study were .94 for the total score, .92 for the Family subscale, .95 for the Friend subscale, and .95 for the Significant Other subscale.

Negative cognitions. Posttraumatic Cognition Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999) measures negative cognitions after traumatic events and consists of the Negative Cognitions About the World, Negative Cognitions About Self, and Self-Blame subscales. Based on the original psychometric data (Foa et al., 1999), we used seven items measuring Negative Cognitions About the World and seven items assessing Negative Cognitions About Self. In the modified instruction, respondents were asked to refer to cognitions occurring after the indirect exposure to trauma. The Self-Blame subscale was not used because of ongoing discussion related to its validity and reliability (Startup, Makgekgenene, & Webster, 2007). Participants rated the degree of agreement to each item on a 7-point Likert-like scale, ranging from 1 (*totally disagree*) to 7 (*totally agree*). Cronbach's alphas for the present study were .89 for the total score, .88 for the Negative Cognitions About the World, and .85 for the Negative Cognitions About Self.

Secondary traumatic growth. Posttraumatic Growth Inventory–Short Form (PTGI–SF, Cann, et al., 2010) was used to measure positive life changes resulting from indirect exposure to trauma. The original PTGI–SF was a 10-item questionnaire measuring experience of positive change after a particular traumatic event. We modified the instruction asking participants to rate the degree of change as a result of their work with patients who were exposed to traumatic events. A 6-point Likert-like response scale was used, ranging from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very great degree*). Although there are five subscales in the PTGI–SF measuring different types of changes, a total score index is used the most often measure (Cann et al., 2010). Cronbach's alpha in the present study for the total score was .92.

Demographics. Demographic questions included the year participants were born, their gender, whether they were in an intimate relationship, their profession, and their highest academic degree (Table 1).

Procedure. Potential respondents were contacted via an e-mail containing information about the study and the link to the online survey. Off-post providers, who were located in the civilian community, received the e-mail through an online newsletter sent by TriWest Healthcare Alliance, an organization managing health benefits for military patients and their families. On-post providers, who were located at military installations, received the e-mail from the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, Colorado, and from the Psychology Consultant to the U.S. Army Surgeon General. Respective agencies sent out standard invitation e-mails to all employees who were potential participants and advertised the study in their internal newsletters. The response rate was not available. Informed consents were obtained. The study was approved by the institutional review board (IRB) at the University of Colorado.

Analytical procedures. Missing data for all variables were replaced with hot deck imputation (Myers, 2011). The hot deck imputation replaces a missing value with an existing value of another participant in the same group (deck) as the participant with a missing value. The deck is composed of combinations of levels of categorical variables. The use of the hot deck imputation is optimal even if missing values are not completely at random when missing values are less than 10% of all values (Myers, 2011). In total, 0.61% of values were replaced. All of the further analyses were performed on 247 participants.

With gender, intimate relationship status, and profession as categories, Little's missing completely at random (MCAR) tests showed that items were missing completely at random for the following scales: the STSE, $\chi^2(39) = 19.87$, $p = .99$, Secondary Traumatic Growth, $\chi^2(40) = 40.81$, $p = .31$, and the STSS, $\chi^2(94) = 77.78$, $p = .89$. The items of the MSPSS and PTCI were not missing completely at random, $\chi^2(33) = 55.74$, $p = .01$, and $\chi^2(115) = 178.17$, $p < .001$, respectively.

Using the SPSS Statistics (Version 20), the following statistical procedures were applied: (a) interitem correlations to analyze relationships among the STSE Scale items to eliminate items whose correlations with each other were too high or too low; (b) a principal component analysis to explore possible dimensions of the STSE Scale; (c) Cronbach's alpha to assess internal consistency reliability; (d) confirmatory factor analysis to test hypothesized unidimensionality of the scale; (e) corrected item-total correlations and Pearson's correlations to test the relationships among STSE and the measures selected to establish validity of the new instrument; and (f) a principal components analysis to examine discriminant validity (Clark & Watson, 1995) of the STSE.

The confirmatory factor analysis was performed with AMOS (Version 20). The maximum likelihood was used as an estimation method. Because univariate nonnormality and multivariate nonnormality were diagnosed, a bootstrap procedure was performed with 1,000 bootstrap samples (Byrne, 2009). Three conventional goodness-of-fit indices (Byrne, 2009) were used to evaluate global model fit: root-mean-square error of approximation (RMSEA), comparative fit index (CFI), and standardized root-mean residual (SRMR).

Results

Preliminary analyses. Corrected item-total correlations were high (Item 1: $r = .75$, Item 2: $r = .77$, Item 3: $r = .61$, Item 4: $r = .75$, Item 5: $r = .66$, Item 6: $r = .74$, Item 7: $r = .68$, Item 8: $r = .58$, and Item 9: $r = .65$; all $ps < .001$). Pearson's correlations were computed among nine items of the STSE Scale. Results of the correlations revealed that the correlation between Item 1 and Item 2 was high, $r(245) = .82$. This high correlation indicated that these two items may have measured the same aspect of secondary trauma self-efficacy. Therefore, Item 2, "Deal with the impact these people have had on my life," was dropped from further analyses because it was a more general statement than Item 1. After Item 2 was removed from the STSE Scale, Item 6, "Keep emotional balance after realizing what had happened to these people," had high correlations with Items 4, 5, and 7, all $rs > .65$ ($ps < .001$), in addition to a relatively higher corrected item-total correlations with remaining items. These high correlations indicated that Item 6 shared a high percentage of the variance with these three items specifically. Therefore, Item 6 was dropped from further analyses, resulting in seven items on the STSE Scale. The final version of the instrument is presented in Figure 1. Corrected item-total correlations for the seven-item version ranged from .53 to .79. Sample distribution analyses showed that the data were negatively skewed for all items, with the distribution differing significantly from normal ($ps < .001$).

Exploratory and confirmatory analysis. A principal components analysis was performed to explore the component structure of the seven items included in the STSE Scale. The analysis extracted one component accounting for 56.89% of the variance (eigenvalue = 3.98) on a basis of the eigenvalue greater than 1 for inclusion of a component. Factor loadings of the items ranged between .71 and .83.

A confirmatory factor analysis for a one-factor unconstrained model showed relatively poor model-data fit, RMSEA = .116, 90% lower and upper confidence limits [.087, .147]; CFI = .936; and SRMR = .047. Modification indices showed that error variances of Items 4 and 5 should covary. The modified model presented good fit with RMSEA of .071, 90% lower and upper confidence limits [037, .106]; CFI of .978; and SRMR of .036. In sum, the results indicated that the seven-item STSE Scale consisted of one component.

A confirmatory factor analysis conducted with the bootstrapping yielded similar fit indices and factor loadings, and therefore suggested good model-data fit. Additional analyses showed that model-data fit was poor (with RMSEA values above .10) when confirmatory factor analyses were conducted for eight-item and nine-item versions of the STSE Scale, with two previously excluded items (2 and 6) taken into account.

Reliability and validity analyses. Internal consistency of the seven-item STSE Scale was $\alpha = .87$, which suggests good reliability. To examine validity of the STSE scale, we computed Pearson's correlations among STSE and theoretically relevant constructs (i.e., secondary traumatic stress, social support, secondary traumatic growth, negative cognitions). As expected, STSE was negatively correlated with secondary traumatic stress and negative cognitions (cf. Table 2), with 29.2% shared variance. Consistent with our expectation, STSE was positively correlated with social support. There was a small significant positive correlation between STSE and secondary traumatic growth. Results of partial correlation analyses (with the number of direct trauma exposures controlled) indicated that the associations between STSE and the other study variables remained significant and similar in size (Table 2).

Table 2
Pearson's Correlations Among the Study Variables

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. STSE		.23***	.24***	.26***	.20***	−.64***	−.49***	−.60***	−.61***	.13*			.04	
2. Support: Total	.32***		.89***	.90***	.93***	−.17**	−.07	−.22***	−.15*	.13*			.04	.25***
3. Support: Family	.27***	.87***		.67***	.75***	−.17**	−.03	−.23***	−.16**	.14*			.02	.24***
4. Support: Friends	.32***	.80***	.54***		.79***	−.17**	−.10	−.20**	−.15*	.10			.04	.26***
5. Support: Others	.23***	.85***	.63***	.49***		−.12**	−.06	−.16**	−.10	.10			.06	.20**
6. STSS: Total	−.54***	−.33***	−.30***	−.29***	−.24***		.83***	.89***	.95***	−.05			.07	−.65***
7. STSS: Intrusion	−.43***	−.21**	−.18**	−.22***	−.13*	.87***		.52***	.73***	.07			.07	−.49***
8. STSS: Avoidance	−.54***	−.39***	−.36***	−.33***	−.28***	.94***	.71***		.79***	−.16**			.08	−.61***
9. STSS: Arousal	−.51***	−.28***	−.23***	−.24***	−.23***	.94***	.77***	.83***		−.03			.04	−.61***
10. Secondary traumatic growth	.14*	.14*	.13*	.12*	.10	.10	.13*	.06	.12*				.05	.13*
11. Negative cognitions: World	−.32***	−.30***	−.29***	−.28***	−.20***	.47***	.34***	.49***	.45***	−.08				
12. Negative cognitions: Self	−.51***	−.39***	−.37***	−.33***	−.30***	.56***	.40***	.57***	.53***	−.10	.52***			
13. Direct trauma exposure	.05	−.11	−.12	−.01	−.13*	.19**	.05	.21***	.22***	.10	.16*	.04		
14. STSE[a]		.38***	.30***	.35***	.30***	−.55***	−.40***	−.54***	−.52***	.16*	−.32***	−.49***		

Note. Correlations in upper diagonal region show values for Polish data (Study 2). Correlations in lower diagonal region show values for U.S. data (Study 1). STSE = Secondary Trauma Self-Efficacy; Support = Perceived Social Support Scale scores; STSS = Secondary Traumatic Stress Scale; Direct trauma exposure in Study 1 represents the number of direct trauma experiences; direct trauma exposure in Study 2 represents whether participants have experienced any of direct traumatic events (with direct exposure dummy coded using 0 = *no* and 1 = *yes*).
[a] Direct exposure partialed out.
* $p < .05$. ** $p < .01$. *** $p < .001$.

To examine discriminant validity of the STSE Scale, we performed a principal components analysis with the seven items of the STSE Scale and the randomly selected seven STSS items. Based on eigenvalue greater than 1 as the inclusion criterion, we identified two components accounting for a total of 55.82% of the variance (eigenvalue = 7.81). One component consisted of the seven items of the STSE Scale (factor loadings ranging from .69 to .80), and the other component consisted of the seven STSS items (factor loadings ranging from .51 to .84).

Study 2

The results of Study 1 provided preliminary support for validity and reliability of the STSE Scale, as well as for its unifactorial structure. As data were collected cross-sectionally, the time stability of the scale was not tested. Moreover, participants worked with a specific population (i.e., traumatized military patients). A longitudinal cross-validation study conducted in a different sample of professionals (i.e., indirectly exposed to civilian-related traumas) was needed. To rectify these limitations, we designed Study 2 to longitudinally evaluate the psychometric properties of the STSE Scale among workers providing services to traumatized civilian population within a different cultural context (in Poland). Extending the findings of Study 1, Study 2 provided a cross-cultural cross-validation study.

Method

Participants. Health care and social workers providing services for civilian survivors of traumatic events participated in the research. The study was a part of a larger investigation focusing on determinants of how job demands and resources contribute to development of secondary traumatic stress. Inclusion criteria for the present study were (a) working at least 1 year as a health care provider (nurse or paramedic) or social worker; (b) providing services for a civilian population suffering from trauma; and (c) being indirectly exposed to trauma through interaction with patients or clients. Of 309 participants, three participants were excluded because they reported having no exposure to potential secondary traumatic events; this resulted in a sample of 306 participants (71 men, 23.2%). Table 1 displays demographic information of the sample. The mean age was 35.41 years old (SD = 8.59) at Time 1. The sample consisted of 148 health care providers (48.4%), 115 social workers (37.6%), and 39 other professionals (12.3%). A lower average education level among Study 2 participants compared with those in Study1 resulted from the differences in the occupations and the national regulations pertaining to the academic degree required for registered practice. In particular, 47% of Study 1 participants were clinical psychologists, who are required to have a doctorate degree in order to practice, whereas the majority of Study 2 participants were nurses and social workers who are required to have a bachelor's or master's degree in order to practice their profession. Participants were indirectly exposed to different types of traumatic events at work, including life-threatening illness or injury (88.9%); physical assault (87.3%); sudden, unexpected death of someone close (82.7%); transportation accident (73.2%); natural disaster (30.1%); or military-related trauma (9.5%). Additionally, 75% of respondents reported that they experienced a direct exposure to traumatic event at least once. The number of direct exposures to trauma was not assessed.

Of those 306 participants who completed the Time 1 assessment, 193 (37 men, 19.2%) took part in Time 2 measurement (see Table 1 for demographics). Attrition analysis showed no significant differences between completers and dropouts in terms of age, items of the STSE Scale, and the STSE Scale total score ($ts < 1.47$, ns), as well as relationship status and education ($\chi^2s < 4.78$, ns). However, compared with dropouts, completers were more often women and social workers, $\chi^2 > 4.45$, $p < .05$. The mean age for Time 2 was 35.41 years (SD = 8.59). The sample for Time 2 consisted of 88 health care providers (45.6%), 79 social workers (40.9%), 23 others (11.9%), and three respondents who did not provide information about their profession (1.6%).

Measures. Participants completed the same set of measures as in Study 1, such as (a) Secondary Trauma Self-Efficacy Scale (α = .88); (b) Secondary Trauma Exposure Scale; (c) Secondary Traumatic Stress Scale (αs = .93 for a total score and .79 for Intrusion, .85 for Avoidance, and .87 for Arousal Symptoms subscales); (d) Multidimensional Scale of Perceived Social Support (αs = .96 for a total score and .96 for Support From Family, .96 for Support From Friends, and .93 for Support From Significant Others subscales); and the short form of the Posttraumatic Growth Inventory (α = .92). The Secondary Trauma Exposure Scale in Study 2 assessed whether participants have experienced directly any of the 10 traumatic events. The scale measuring the negative cognitions about the world and self was not included. The Polish versions of the scales were prepared using back-translation procedures. As in Study 1, participants were asked to respond to the items in the context of work-related indirect exposure to trauma.

Procedure. Data were collected with a web-based survey. The following recruitment strategies were applied: distribution of leaflets and a public presentation of the study during the annual national meetings of professional organizations, advertisements in specialist journals reaching all registered professionals, and information posted on web sites for specialists and practitioners (mental health professionals, nurses, doctors, and emergency and social services workers) working with traumatized clients. Those who were interested were informed about the study aims; they then provided informed consent and filled out the questionnaires. Six months later, respondents received an e-mail invitation to take part in Time 2 measurement. The mean time elapsed between Time 1 and Time 2 surveys was 162.26 days (SD = 39.35). Personal identification codes were used to secure anonymity. The study was approved by the IRB at the first authors' home institution in Poland.

Analytical procedures. As in Study 1, missing data were replaced using the hot deck imputation method (Myers, 2011). In total, 1.59% values were replaced. The Little's MCAR tests indicated that items were missing completely at random for the following scales: the STSE Scale at Time 1, $\chi^2(16) = 18.22$, $p = .31$; the STSE Scale at Time 2, $\chi^2(30) = 32.92$, $p = .32$; the MSPSS, $\chi^2(98) = 115.81$, $p = .11$; and the STSS, $\chi^2(193) = 217.20$, $p = .11$. The PTGI items were not missing completely at random, $\chi^2(53) = 80.06$, $p = .01$.

Cronbach's α served as the index of internal consistency reliability. Pearson's correlation was used to assess test–retest reliability by correlating Time 1 and Time 2 STSE scores and to test validity of the scale by correlating STSE with the relevant con-

structs. We performed the exploratory and confirmatory factor analyses using the same procedure, software, and interpretation criteria as in Study 1.

Results

Preliminary analyses. Table 1 displays means and standard deviations of all variables. In line with Study 1, Items 2 and 6 were removed from nine-item version of the STSE Scale, and the seven-item version was used for further analysis. Pearson's correlations among nine items of the STSE Scale (Time 1) showed that the correlation between Items 1 and 2 was high, $r(304) = .81$, $p < .001$, and that Item 6 was highly correlated with Items 4, 5, and 7, $rs > .68$. Sample distribution showed that Items 1, 3, 4, and 7 were normally distributed, and Items 5, 8, and 9 were mildly and negatively skewed, with the distribution differing significantly from normal ($ps < .001$).

Exploratory and confirmatory factor analysis. Using the data obtained from 306 participants, we performed the principal components analysis to explore possible dimensions of the STSE Scale (Time 1). The analysis extracted only one component accounting for 61.87% of the variance (eigenvalue = 4.33). Factor loadings for the seven items ranged between .64 and .87.

The confirmatory factor analysis was performed to further evaluate the parameter estimates and model fit of the one-factor solution of the STSE Scale. In line with Study 1, error variances of Items 4 and 5 were assumed to covary. The analysis, conducted for 306 participants, suggested good model-data fit with RMSEA = .050, 90% lower and upper confidence limits [.008, .083], CFI = .991, and SRMR = .023. These results showed that the STSE Scale consisted of one primary component.

Reliability and validity of the STSE scale. Internal consistency of the STSE Scale was assessed at both time points. Cronbach's alpha values were .89 at Time 1 and .88 at Time 2, indicating good internal consistency. Test–retest reliability was examined on the sample of 193 participants who completed the STSE Scale at both measurement points (165-day period). The association between the STSE scores at Time 1 and Time 2 was high, $r(191) = .65$, $p < .001$.

Table 2 displays correlations among STSE at Time 1 and theoretically relevant constructs. As expected, STSE was negatively correlated with secondary traumatic stress. Consistent with the hypotheses and the results of Study 1, STSE was positively correlated with social support. In line with the results of Study 1, STSE and secondary traumatic growth were positively associated, although the correlation was small. Results of partial correlations (with direct trauma exposure controlled) indicated that associations between STSE and the other study variables remained significant and similar in size (Table 2). Across the study variables, participants exposed to trauma directly did not differ from those without a direct exposure (all $Fs < 1.93$, $ps > .168$).

Factor model invariance. A two-group model representing the respective samples was tested in order to evaluate if the one-factor structural model tested in Study 1 and Study 2 was invariant across the U.S. ($n = 247$) and Polish ($n = 306$) samples. Because of multivariate nonnormality, the bootstrap procedure was performed (Byrne, 2009). Table 3 displays the goodness-of-fit statistics for the two-group model. Compared with the unconstrained model (see Model 1, Table 3), the model with factor loadings, variances, and the covariance constrained to be equal in both groups (Model 2, Table 3) differed significantly in terms of fit indices, $\Delta\chi^2(15) = 90.02$, $p < .001$. Therefore, Model 2 was rejected. Further, the model with error variances constrained to be equal for two groups (Model 4, Table 3) was also rejected, $\Delta\chi^2(9) = 76.91$, $p < .001$.

Further analyses showed that the nested model with factor loadings constrained to be equal across both groups (Model 3, Table 3) did not differ from the unconstrained model, $\Delta\chi^2(6) = 10.69$, *ns*, and therefore Model 3 should be accepted. Additionally, the model with the covariance constrained to be equal in both groups (Model 5, Table 3) did not differ from the unconstrained model, $\Delta\chi^2(1) = 0.40$, *ns*, and therefore Model 5 should be accepted. Based on these results, the final model with factor loadings and the covariance constrained to be equal across both groups (Model 6; Table 3) was compared with the unconstrained model. The results indicated that the final model did not differ form the unconstrained model, $\Delta\chi^2(7) = 10.72$, *ns*, and therefore Model 6 may be accepted as the final model. Factor loadings of the items in the final model are displayed in Figure 2.

Differences in associations across Study 1 and Study 2. Across both studies, similar Pearson's correlations were found among STSE Scale and the following indices: Perceived Social Support–total score, $z = 1.13$, $p = .26$; Perceived Support From Family, $z = 0.37$, $p = .71$; Perceived Support From Friends, $z = 0.76$, $p = .44$; Perceived Support From Significant Others, $z =$

Table 3
Goodness-of-Fit Statistics for Tests of Invariance of Factor Structure for Study 1 and Study 2

Model Description	χ^2	χ^2/df	RMSEA	CFI	SRMR	GFI	NFI	$\Delta\chi^2$	ΔNFI
1. Hypothesized model (unconstrained)	51.19	2.01	.043	.986	.036	.974	.972	—	—
2. Factor loadings, variances, and covariance constrained to be equal	142.20	3.47	.067	.945	.068	.937	.925	90.02***	.048
3. Factor loadings constrained to be equal	62.87	1.97	.042	.983	.045	.969	.967	10.69	.006
4. Variances constrained to be equal	129.10	3.69	.070	.949	.053	.942	.932	76.91***	.041
5. Covariance constrained to be equal	52.59	1.95	.041	.986	.036	.974	.972	0.40	.000
6. Factor loadings and covariance constrained to be equal (final model)	62.91	1.91	.041	.984	.045	.969	.967	10.72	.006

Note. The $\Delta\chi^2$ indicates a change in a chi-square statistic from the hypothesized model; *df* = degrees of freedom. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; SRMR = standardized root-mean-square residual; GFI = goodness-of-fit index; NFI = normed fit index. *** $p < .001$: A significant $\Delta\chi^2$ value indicates that the model was not a good fit for the hypothesized model.

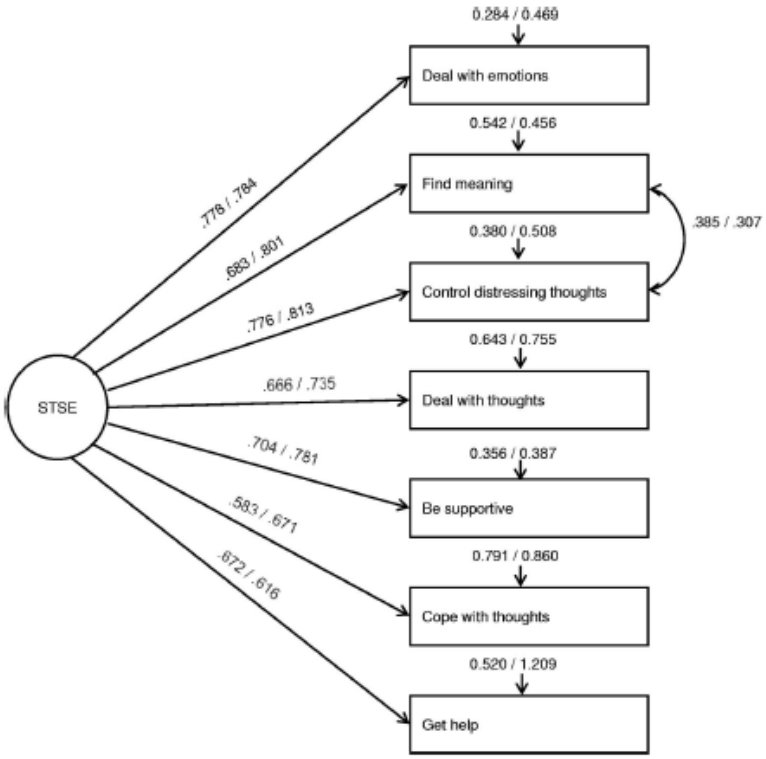

Figure 2. Final two-group confirmatory factor analysis model of the Secondary Trauma Self-Efficacy Scale. Standardized regression weights (i.e., factor loadings), variances, and correlations between error variances are presented. In the final model, factor loadings and covariance are constrained to be equal in Study 1 and Study 2. Numbers before the slash refer to Study 1; numbers after the slash refer to Study 2. STSE = Secondary Trauma Self-Efficacy. Full list of the STSE Scale items presented in Figure 1. All parameters significant at $p < .001$.

0.37, $p = .71$; Secondary Traumatic Stress–total score, $z = 1.79$, $p = .07$; Secondary Traumatic Stress–Intrusion subscale, $z = 0.89$, $p = .38$; Secondary Traumatic Stress–Avoidance subscale, $z = 1.04$, $p = .30$; Secondary Traumatic Stress–Arousal subscale, $z = 1.70$, $p = .08$; and Secondary Traumatic Growth, $z = 0.12$, $p = .91$. In sum, the associations found in the two studies (Table 2) did not differ significantly.

General Discussion

Our studies evaluated the characteristics of the Secondary Trauma Self-Efficacy (STSE) Scale, a measure designed to capture beliefs about the ability to deal with barriers associated with secondary exposure to trauma. This short seven-item scale tackles the barriers of tasks at work (including providing services to trauma survivors), but it also refers to controlling emotional and cognitive reactions related to the indirect exposure. Compared with other measures of self-efficacy that were previously applied in the context of exposure to secondary trauma, the STSE Scale is specific to challenges posed by the indirect exposure to trauma, including environmental (i.e., work-related) and individual (cognitive and emotional) demands. As proposed in SCT, self-efficacy beliefs, which make a difference in specific stressful situations, should closely reflect the demands related to this situation (cf. Bandura, 1997). Further, in line with optimal matching hypothesis (Cutrona, 1990), the scale matching both stressful demands and stress outcomes may offer the best approach to investigating self-efficacy related to secondary exposure.

Results of the present studies supported the one-factor structure of the STSE Scale and its good reliability. Factor analyses comparing the two language versions indicated the invariant structure of the scale. Such structure is in line with SCT, assuming that self-efficacy is a one-dimensional construct (Bandura, 1997). Unifactorial structure of other types of self-efficacy, such as general self-efficacy or self-efficacy referring to coping with one's own

trauma, were also confirmed in studies testing psychometric characteristics of other self-efficacy measures (Hyre et al., 2008; Lambert et al., 2012; Schwarzer & Jerusalem, 1995). Further, self-efficacy referring to secondary trauma, measured with the STSE Scale, showed high stability over 6 months. According to SCT, moderate to high stability may be expected, because self-efficacy may fluctuate over time due to mastery experiences over environmental and intrapersonal challenges (Bandura, 1997). In sum, the results provide evidence for good psychometric properties of the scale and verify its theoretically assumed structure.

In both studies, secondary trauma self-efficacy was related to the selected constructs, as hypothesized. The negative associations between STSE and secondary traumatic stress were significant and moderate, indicating that beliefs about ability to deal with challenges related to secondary trauma exposure are important in predicting lower levels of secondary traumatic stress. The size of correlation coefficients corresponds to associations between self-efficacy and health outcomes reported in meta-analyses dealing with survivors of primary trauma (Luszczynska et al., 2009). In the only other study testing for associations between secondary traumatic stress and self-efficacy (Bonach & Heckert, 2012), researchers applying a measure of efficacy that referred to respondents' own role and efficiency at work found weak associations, and only 1% of secondary traumatic stress variance was explained. In contrast, self-efficacy measured with STSE Scale explains 23%–39% of variance in secondary traumatic stress. In conclusion, the STSE Scale showed a potential to help explain the psychological distress process among workers exposed to secondary trauma.

The correlations between secondary trauma self-efficacy and other trauma-related cognitions such as negative cognitions about self and about the world (Foa & Rothbaum, 1998) and secondary traumatic growth were significant (higher self-efficacy was associated with less negative cognitions and with higher growth) and in the low to moderate range. Therefore, the amount of variance shared between these variables was not high, confirming that STSE and other constructs are distinct aspects of cognitive functioning after secondary exposure to trauma. Similar strength of associations between self-efficacy and cognitions about self and the world was found in research dealing with victims of primary exposure to trauma (Cieslak et al., 2008). We have identified no other study showing associations between self-efficacy and cognitions about self and the world in the context of secondary trauma exposure; therefore, our findings provide a preliminary novel evidence for the interplay between positive and negative cognitions among professionals exposed to secondary trauma. Future research should investigate if these general negative cognitions operate through trauma-specific cognitions, such as STSE.

Finally, secondary trauma self-efficacy measured with the STSE Scale was moderately related to higher levels of social support from family, friends, and other significant sources. The findings are in line with posttraumatic adaptation model assuming that social resources should foster self-efficacy beliefs (Benight & Bandura, 2004) as well as in line with models explaining associations between social support and cognitions (Schwarzer & Knoll, 2007). Further, models explaining factors affecting practitioners working with clients exposed to trauma focused solely on support from work-related sources (cf. Voss Horrell et al., 2011). Our findings suggest that support from sources outside work may also play a relevant role. As two previous studies accounting for self-efficacy and social support among professionals exposed to secondary trauma did not test for the associations between these constructs (Bonach & Heckert, 2012; Ortlepp & Friedman, 2002), no comparison between our results and previous research can be made. Our findings, therefore, provide novel preliminary evidence for the relationship between self-efficacy and support from sources outside work.

In sum, the present research provides evidence for the validity of the STSE Scale. All hypothesized associations of secondary trauma self-efficacy with the secondary traumatic stress, negative cognitions, secondary traumatic growth, and perceived social support were confirmed. The sizes of correlation coefficients were similar in both language versions of the STSE Scale. Future studies are needed to further evaluate whether the STSE Scale is a superior predictor of adaptation after secondary exposure to trauma, compared with other measures of self-efficacy, such as general self-efficacy (Schwarzer & Jerusalem, 1995) or work-related efficacy (Bonach & Heckert, 2012).

The strength of our research lies in testing the STSE Scale properties in two different contexts. Similar patterns of associations emerged from data collected in the United States and Poland, and the two language versions showed similar psychometric properties. The findings were similar for workers exposed to civilian-related secondary trauma and those who were exposed to secondary trauma through providing services to military personnel. These results indicate that the STSE Scale is a robust measure and allow for a preliminary conclusion that secondary trauma self-efficacy may have similar properties and operate similarly across different cultural contexts. Further research is needed to investigate individuals in different types of occupations, such as oncology nurses or juvenile justice education workers, who may suffer from relatively high levels of secondary traumatic stress (Bride et al., 2007; Dominguez-Gomez & Rutledge, 2009; Hatcher et al., 2011).

The utility of the STSE Scale in secondary trauma experiences that are unrelated to work, such as secondary trauma exposure reported by partners of cancer patients or spouses of military service members, may be low. Three items of the STSE Scale refer to barriers experienced due to working with traumatized individuals. Further, a reference to interaction with other people at work may not be ideal in case of some professionals exposed to secondary trauma, such as clergy members (Hendron, Irving, & Taylor, 2012). The phrase "working with these people" could be replaced with "interacting with these people," but other versions of the STSE Scale with language adjustments would require additional psychometric evaluations.

Our research has some limitations. Data were collected among relatively heterogeneous samples, but several occupational groups that may suffer from relatively high secondary traumatic stress were not included (e.g., emergency nurses or juvenile justice system workers; Dominguez-Gomez & Rutledge, 2009; Hatcher et al., 2011). Although both studies applied multiple recruitment strategies in order to reach diverse target populations, these are both convenience samples. Future research needs to account for the representativeness of the samples.

The utility of the STSE Scale was not compared with the utility of other measures of self-efficacy. The instructions in the original measures assessing social support, growth, and negative cognitions were modified in order to tackle participants' functioning in the context of work-related secondary exposure. Changing more gen-

eral measures (i.e., referring to any type of trauma exposure or any type of stressful event) into specific measures by means of narrowing down the instructions might inflate the observed associations between the constructs. The number of situations of direct exposure to traumatic events was not evaluated in Study 2. Future research needs to account for other occupational groups, different types of self-efficacy, and other stress outcomes, such as job burnout or diminished quality of life. Studies aiming at further psychometric evaluation of the STSE Scale may consider including additional items to assure that the STSE concept is covered in a sufficiently broad way. On the other hand, short versions of the STSE Scale may be needed for multivariate investigations. Future studies need to clarify how the secondary trauma self-efficacy construct may operate and whether it influences practitioners' well-being and their effectiveness at work. Developing a psychometrically sound measure of the secondary trauma self-efficacy was an essential step preceding research on evaluating mechanisms and the effects of secondary trauma self-efficacy.

The present study investigated the properties of a new measure of self-efficacy, referring to coping with secondary trauma experiences. The data collected among professionals working with civilians and military trauma victims indicated good psychometric characteristics of the STSE Scale and its invariance for two language versions. The interest in research on secondary traumatic stress is growing as organizations and practitioners call for identifying protective factors (Elwood et al., 2011; Tyson, 2007; Voss Horrell et al., 2011). Secondary trauma self-efficacy may constitute one of the key protective individual resources, promoting well-being and operating in concert with other individual and environmental resources (Luszczynska et al., 2009). Our research proposes a new measure to assess this personal resource.

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Appendix II: Paper: Secondary traumatic stress among mental health providers working with the military: Prevalence and its work- and exposure-related correlates.

Secondary Traumatic Stress Among Mental Health Providers Working With the Military

Prevalence and Its Work- and Exposure-Related Correlates

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Abstract: Our research assessed the prevalence of secondary traumatic stress (STS) among mental health providers working with military patients. We also investigated personal, work-related, and exposure-related correlates of STS. Finally, using meta-analysis, the mean level of STS symptoms in this population was compared with the mean level of these symptoms in other groups. Participants (N = 224) completed measures of indirect exposure to trauma (*i.e.*, diversity, volume, frequency, ratio), appraisal of secondary exposure impact, direct exposure to trauma, STS, and work characteristics. The prevalence of STS was 19.2%. Personal history of trauma, complaints about having too many patients, and more negative appraisals of the impact caused by an indirect exposure to trauma were associated with higher frequency of STS symptoms. A meta-analysis showed that the severity of intrusion, avoidance, and arousal symptoms of STS was similar across various groups of professionals indirectly exposed to trauma (*e.g.*, mental health providers, rescue workers, social workers).

Key Words: Secondary traumatic stress, indirect exposure to trauma, mental health providers, military trauma.

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The rates of posttraumatic stress disorder (PTSD) among the US military and veterans across studies range from a current prevalence of 2% to 17% to a lifetime prevalence of 6% to 31% (Richardson et al., 2010). These rates are higher than in the general US population, in which the current prevalence is 3.5% (Kessler et al., 2005) and the lifetime prevalence is 6.8% (Kessler et al., 2005). The numbers of military or veteran patients seeking mental health care have grown drastically in recent years. The Department of Veterans Affairs (VA) alone has observed a 200% increase in the number of patients with PTSD receiving behavioral health services, from 139,062 in 1997 to 279,256 in 2005 (Rosenheck and Fontana, 2007). With a growing need for treatment, the VA alone added 4,330 mental health professionals to its workforce (Voss Horrell et al., 2011). These statistics show that the population affected indirectly by trauma, through providing services for traumatized patients, is growing rapidly. Given the exponential increase in clinical need and potential for secondary exposure by military mental health providers, the purposes of this investigation were threefold: a) to explore the prevalence of secondary traumatic stress (STS) among mental health providers working with military patients and to compare the severity of STS symptoms in this population with other mental health providers; b) to test the relationship between indirect exposure to trauma and STS; and c) to investigate the possible correlates of STS. These aims were achieved through a two-study approach, with study 1 focusing on the prevalence and correlates of STS and study 2 conducting a meta-analysis to compare our sample prevalence with other indirectly exposed samples.

Psychosocial Effects of Indirect Trauma Exposure Across Occupational Groups

Whereas most studies examining the effects of PTSD have focused on trauma survivors or victims, information about the effect on providers delivering trauma treatment is more limited. Indirect (also called vicarious or secondary) exposure to trauma through work with traumatized patients might have a positive effect on providers' posttraumatic growth (Brockhouse et al., 2011), but it is also predictive of higher distress (Pearlman and Mac Ian, 1995), increased negative cognitions (*e.g.*, low level of self-trust; Pearlman and Mac Ian, 1995), and higher job burnout (Ballenger-Browning et al., 2011).

Most studies investigating the negative effects of indirect trauma exposure on mental health providers have focused on a set of conceptually overlapping outcomes. These include vicarious traumatization (McCann and Pearlman, 1990), compassion fatigue (Figley, 2002), and STS (Bride et al., 2004). The ongoing discussion about the similarities and the differences between these concepts (Jenkins and Baird, 2002) shows that their definitions share one or more of the following components: indirect exposure to a traumatic material, PTSD symptoms, and negative shifts in therapists' cognitive schema. STS is usually associated with therapists' PTSD-like reactions, such as intrusive re-experiencing of the traumatic material, avoidance of trauma triggers and emotions, and increased arousal, all resulting from indirect exposure to clients' trauma (Bride et al., 2004). *Compassion fatigue* is defined as reduced empathic capacity or client interest manifested through behavioral and emotional reactions from exposure to traumatizing experiences of others (Adams et al., 2006). Finally, *vicarious trauma* is the negative cognitive shift in therapists' worldview (McCann and Pearlman, 1990).

The incongruities in these definitions have led to some research discrepancies on the consequences of indirect trauma exposure and have also hindered cross-sample comparisons. This study used the term *secondary traumatic stress* to measure the indirect exposure to clients' trauma material that leads to the providers' PTSD-like symptoms of re-experiencing, avoiding, and hyperarousal, corresponding with criteria B, C, and D, respectively, of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (*DSM-IV-TR*; American Psychiatric Association [APA], 2000).

Prevalence of STS differs across studies and occupation groups. For example, when measured with the Secondary Traumatic

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Stress Scale (STSS; Bride et al., 2004), *DSM-IV-TR* (APA, 2000) criteria B, C, and D for a PTSD-like diagnosis of STS were met by 15.2% of social workers (Bride, 2007), 16.3% of oncology staff (Quinal et al., 2009), 19% of substance abuse counselors (Bride et al., 2009), 20.8% of providers treating family or sexual violence (Choi, 2011a), 32.8% of emergency nurses (Dominguez-Gomez and Rutledge, 2009), 34% of child protective services workers (Bride et al., 2007), and 39% of juvenile justice education workers (Smith Hatcher et al., 2011). There is no estimation of the prevalence of STS among mental health specialists providing treatment for military and veteran patients. In addition, we were unable to identify any research on severity of the intrusion, avoidance, and arousal symptoms in this specific group of providers. Therefore, the present study aimed at identifying STS prevalence and symptom severity among mental health providers working with military patients.

Using a meta-analytic approach, we aimed to compare the severity of the STS symptoms identified in the present study sample with the severity of these symptoms among other populations offering services to traumatized clients. Because the discrepancies between studies testing the prevalence of STS may result from applying different assessment methods, prevalence meta-analysis should compare data collected with the same measure (*e.g.*, the STSS; Bride et al., 2004).

The Complexity of Indirect Exposure to Trauma

The next aim of this study was to investigate the basic assumption that indirect exposure to traumatic events is a critical factor in the development of STS symptoms. Whereas measuring direct exposure to trauma is a standard approach in studies on PTSD, many studies on STS focus more on the PTSD-like symptoms, reflecting *DSM-IV-TR* criteria B, C, and D for a PTSD diagnosis (APA, 2000), and pay less attention to the indirect exposure (criterion A1) hypothetically causing these symptoms. Moreover, even if a measure of indirect exposure is used in a study, it is often analyzed as a dichotomous or one-dimensional variable, usually referring to duration of work with traumatized patients (Devilly et al., 2009; Galek et al., 2011).

Assuming that exposure to trauma patients is a one-dimensional construct may partially explain the inconsistencies in research on the associations between indirect trauma exposure and STS (Sabin-Farrell and Turpin, 2003). To clarify which aspects of the exposure may be relevant for STS, we accounted for four indices of indirect trauma exposure in mental health providers: diversity, volume, frequency, and ratio. Diversity reflected the variety of indirect trauma exposure and allows for determining whether a provider treats patients for PTSD caused by one type of traumatic event (*e.g.*, natural disaster) or whether a provider offers services for patients with PTSD caused by multiple types of traumatic events (*e.g.*, a combat-related experience, transportation accident). Volume referred to the number of patients treated for exposure to a traumatic event. Frequency indicated how often a provider was exposed to a patient's traumatic material. Ratio indicated the percentage of traumatized patients in the provider's case load. Further, because the mental health providers in this study provided their services to military and veteran patients, the ratio of patients with trauma caused by a military combat experience was also considered.

Psychosocial and Work-Related Correlates

In addition to the indirect exposure to trauma, organizational and individual factors may affect professionals working with traumatized military patients (Voss Horrell et al., 2012). For example, a provider's own direct exposure to traumatic events may contribute to STS symptoms (cf. Devilly et al., 2009). Thus, one's personal trauma history should be accounted for when testing for the relationship between indirect exposure and STS. Recent research indicated, however, that the results of studies testing the relationship between personal history of trauma and STS were inconclusive (Elwood et al., 2011). The discrepancies in the results may, to some degree, depend on the type of the direct trauma exposure measured. For example, lifetime personal history of trauma, but not past-year trauma exposure, was positively correlated with STS in child protective services workers (Bride et al., 2007).

Theories of PTSD emphasize the importance of cognitive appraisals as contributors to the etiology and maintenance of PTSD (Dalgleish, 2004; Ehlers and Clark, 2000). In particular, negative appraisals about the nature and meaning of the event (*e.g.*, whether it offers threat or safety), about the self (*e.g.*, reactions to the event and subsequent trauma symptoms), and about the world (*e.g.*, other people's reaction to the event) are all said to contribute to the development of posttraumatic distress (Ehlers and Clark, 2000). Other types of cognitive appraisals may involve evaluations of the importance or impact of the stress exposure on subsequent functioning. Indeed, theories of stress assume this type of cognitive appraisal as a key component of stress and adaptation processes predictive of stress consequences (Lazarus and Folkman, 1984). Further, the individual's appraisal of the impact of the exposure is related to the *DSM-IV-TR* (APA, 2000) criterion F for the PTSD diagnosis regarding the significance of functional impairment. Therefore, the present study investigated the relationship between the mental health providers' appraisal of the impact of the indirect exposure and STS symptoms.

In addition to the indirect exposure, appraisal of its impact, and direct exposure to trauma, some work characteristics may also predict STS in mental health providers. Theories explaining distress among workers highlighted that work-related demands and work-related support have predicted employees' well-being (Cieslak et al., 2007; Van der Doef and Maes, 1999). In line with this assumption, work-related characteristics were found to predict STS symptoms, and their effect was stronger than the effect of the indirect exposure (Devilly et al., 2009).

One work-related characteristic specific to mental health providers is the type of psychotherapy provided, such as prolonged exposure (PE). One might consider this to be a risk factor for therapists, yet any assumptions should be made with caution because providing exposure therapy for trauma patients was not found to be related to STS, whereas clinicians who advocate exposure therapy but do not provide it for patients were found to present strong STS symptoms (Deighton et al., 2007).

Professional social support is often identified as a protective factor for the development of STS. The results, however, are ambiguous, even for studies using the same measure of STS. For example, investigators of Internet child pornography who indicated high social support from family and friends reported low STS, but strong reliance on co-workers was correlated with high STS (Perez et al., 2010). High work-related social support was found to predict a low level of avoidance symptoms but was unrelated to intrusion and arousal symptoms of STS (Argentero and Setti, 2011). In addition, some aspects of organizational support (*e.g.*, informational support) seem to be an important protective factor for development of STS symptoms (Choi, 2011b). There is also evidence for reducing STS symptoms through professional support received in clinical supervision (Creamer and Liddle, 2005). This evidence shows that professional supervision may constitute a protective factor for development of STS. Collectively, the research is equivocal on the positive and negative effects of professional support for mental health providers.

STUDY 1: PREVALENCE AND CORRELATES OF STS

The purposes of this study were twofold: a) to test the relationship between indirect exposure to trauma (measured with a multidimensional assessment of the exposure, including diversity, volume, frequency, and ratio) and STS and b) to investigate the possible correlates of STS: personal history of trauma, providers'

appraisal of the impact of secondary exposure, work characteristics, and professional support.

Methods

Participants and Procedure

This study was part of the ongoing SupportNet Project designed to evaluate indirect exposure to trauma; work-related demands and resources; and their impact on job burnout, work engagement, and STS in military mental health providers. Data were collected by means of an online survey. An e-mail with information about the SupportNet study and a link to the survey was sent to on-post and off-post behavioral health providers working with military patients. The off-post providers (*i.e.*, located in the civilian community) received an invitation to this study through an online newsletter sent by TriWest Healthcare Alliance, an organization that manages health benefits for military patients and their families. The on-post providers (*i.e.*, working within military installations) were contacted by e-mail sent by the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, CO, and by the psychology consultant to the US Army Surgeon General.

Of 339 participants who initially consented to this study, 224 (66%) met the inclusion criteria (*i.e.*, working at least 1 year as a clinical psychologist, counselor, or social worker; providing services for a military population; and being indirectly exposed to trauma through work with patients) and completed the survey. The mean age was 48.92 (SD, 13.04) years, and the mean length of work experience was 16.40 (SD, 10.42) years. Demographic and work characteristics of the sample are presented in Table 1. The participants were predominantly women (67%); with doctorate (54%) or master's degrees (46%); and working full time (78%) or part time (22%) as clinical psychologists (45%), counselors (31%), or social workers (23%). Slightly more than half of the sample was serving as on-post (57%); and the rest, as off-post (43%) behavioral health providers. The sample was almost equally split between those who did and those who did not have any military experience (44% and 56%, respectively). One fifth of the sample (19%) had deployed to a combat zone at least once. They reported using a mixture of different therapeutic approaches, with most reporting cognitive behavioral therapy (CBT, 90%), followed by cognitive processing therapy (CPT, 42%), PE (30%), and eye movement desensitization and reprocessing (EMDR, 29%).

Measures

The online questionnaire consisted of several instruments.

Indirect exposure to trauma

The Secondary Trauma Exposure Scale (STES) was developed for the purpose of this study to measure mental health providers' indirect exposure to traumatic events. Similar to the brief instruments designed for screening direct exposure to trauma (Norris, 1990), the STES consists of the list of potentially traumatic events. In the STES, however, participants are not instructed to indicate the traumatic events they personally experienced but to check the events (answers yes or no) they were exposed to through their work with patients. The list of 10 events included natural disasters, transportation accidents, other serious accidents, physical assaults, sexual assaults, other life-threatening crimes, military combat or exposure to a war zone, life-threatening illness or injury, sudden death of someone close, and a global category of "other."

The STES measures four aspects of indirect exposure: diversity, volume, frequency, and ratio. The diversity index is calculated by counting how many types of traumatic events were checked on the list (range, 0–10). Volume and frequency of an indirect exposure were measured with two separate questions also referring to the list: "During your professional career, how many of your patients experienced at least one of the above events?" (the response scale "none, 1 or 2, 10 or less, 50 or less, 100 or less, a few hundred, and a few thousand" was coded as 0, 2, 10, 50, 100, 500, and 1000, respectively) and "During your entire professional career, how frequently have you worked with patients who experienced at least one of the above events?" (scale, 1–7: never, a few days in a year; 1 day a month, a few days a month, 1 day a week, a few days a week, and every day), respectively. The ratio of indirect exposure was assessed with two questions estimating the percentage of the providers' clients who were traumatized.

Appraisal of the impact of indirect exposure

The appraisal of the impact of being exposed to the history and details of patients' traumatic events was assessed with 10 items. The participants were asked to assess how hearing about each checked event in the STES affected them. The responses are given on a scale from 1 to 7 (from "very negative" through "neutral" to "very positive"). The item mean score was calculated as the index of appraisal. The Cronbach's α was 0.92.

Direct exposure to trauma

To control for the providers' direct exposure to trauma, we asked a question referring to the list of 10 potentially traumatic events

TABLE 1. Demographic and Work Characteristics of the Behavioral Health Providers Participating in the SupportNet Study

Characteristic	*n*	%
Sex		
Male	75	33
Female	149	67
Relationship status		
Long-term committed relationship	169	75
Not in a relationship	50	22
Profession		
Clinical psychologist	102	45
Counselors or psychotherapists	70	31
Social workers	52	23
Education		
Master's degree	103	46
Doctorate or professional degree	120	54
Employment		
Part time	49	22
Full time	175	78
Military experience		
No military service	125	56
Active or former military	98	44
Deployment	43	19
Therapy		
CBT	201	90
CPT	95	42
PE	68	30
EMDR	64	29
Work setting		
On-post providers	127	57
Off-post providers	97	43

$N = 224$ for the total sample. Frequencies may not add up to 224 because of missing data. Percentages may not sum up to 100% because of missing data or rounding off.

TABLE 2. Descriptive Statistics for the Demographic, Work-Related, and Exposure-Related Characteristics

Variables	Mean	SD	Range	
			Actual	Potential
Age	48.92	13.04	28–80	—
Years of work experience	16.40	10.42	1–45	—
Work characteristics and professional support				
Too much paper work	2.79	1.31	1–5	1–5
Too many patients	2.01	1.23	1–5	1–5
No. hours of individual clinical supervision or consultation per month	2.51	3.90	0–28	—
No. hours of group clinical supervision or consultation per month	2.17	3.25	0–20	—
Frequency of peer supervision	4.32	1.49	1–7	1–7
Direct exposure	3.24	1.84	1–9	0–10
Indirect exposure to trauma				
Diversity of exposure	7.41	2.18	1–10	0–10
Volume	423.89	295.49	2–1000	0–1000
Frequency	6.17	0.96	3–7	1–7
Ratio: percentage of traumatized patients	63.32	25.25	2–100	0–100
Ratio: percentage of patients describing a graphic military combat experience	32.02	28.54	0–100	0–100
Appraisal of indirect trauma exposure	3.34	0.77	1–6	1–7
STS	31.91	10.65	17–66	17–85

Response rates for indices of volume, frequency, and frequency of peer supervision are provided in the *Work and Exposure Characteristics* section (see *Results* for study 1).

included in the STES: "How many of the types of traumatic events listed above have you personally experienced?" (scale from 0 to 10).

Secondary traumatic stress

Symptoms of secondary trauma were measured with the STSS (Bride et al., 2004). This 17-item, self-report instrument evaluated the frequency of intrusion, avoidance, and arousal symptoms resulting from an indirect exposure to trauma at work. The list of symptoms corresponds to the B, C, and D diagnostic criteria for PTSD specified in the *DSM-IV-TR* (APA, 2000). The responses were given on a scale from 1 to 5 (from "never" to "very often"). The participants indicated how often each of the symptoms was experienced in the last month. Scores were obtained by summing the items. Good psychometric properties of this instrument have been demonstrated in many studies (Bride, 2007; Bride et al., 2004). The reliability in our study was $\alpha = 0.79$ for intrusion, $\alpha = 0.87$ for avoidance, $\alpha = 0.84$ for arousal symptoms, and $\alpha = 0.93$ for the total score.

Work characteristics and professional support

Several survey questions were designed to gain knowledge about work content, work-related demands, and resources. We asked about the primary occupational role (clinical psychologist, counselor, psychotherapist, or social worker), therapeutic approaches used in work with clients (CBT, CPT, PE, or EMDR), employment status (part time or full time), years of work experience as a mental health provider, the exact number of hours of individual and group supervision received monthly, and frequency of professional peer support (scale, 1–7: never, a few days in a year, 1 day a month, a few days a month, 1 day a week, a few days a week, and every day). We also assessed the participants' perception of their workload in the last month by asking how frequently they were constrained by a) having too much paper work and b) having too many patients (scale, 1–5: less than once per month or never, once or twice per month, once or twice per week, once or twice per day, and several times per day).

Demographic information

Sociodemographic information was collected: sex, age, highest level of education, relationship status, military status, and deployment to a combat zone.

Results

Work and Exposure Characteristics

Table 2 presents means, standard deviations, and actual and potential ranges for the main variables of this study. The participants were receiving a mean of 2.51 hours of individual clinical supervision and 2.17 hours of group clinical supervision per month. They were receiving peer support by discussing the patients with colleagues for a few days a month (mean percentage of response categories: never, 1%; a few days in a year, 13%; 1 day a month, 16%; a few days a month, 27%; 1 day a week, 15%; a few days a week, 23%; and every day, 5%). The respondents also indicated that they were, on average, constrained by having too many patients (*i.e.*, once or twice per month) and, more frequently, by having too much paper work (*i.e.*, once or twice per week). All the providers reported at least one personally experienced traumatic event, with a mean number of approximately 3 (SD, 1.84). A similar number of personally experienced traumatic events were reported among military medical personnel (Maguen et al., 2009).

TABLE 3. Frequency and Percentage of the Behavioral Health Providers Meeting the Diagnostic Criteria for STS Due to an Indirect Trauma Exposure through a Practice with Traumatized Military Patients

Criteria	*n*	%
No criteria met	76	33.9
Criterion B: intrusion	129	57.6
Criterion C: avoidance	67	29.9
Criterion D: arousal	79	35.3
Criteria B and C	53	23.7
Criteria B and D	66	29.5
Criteria C and D	51	22.8
Criteria B, C, and D	43	19.2

TABLE 4. Comparing Intensity of Intrusion, Avoidance, Arousal, and Total Score of the STSS in the SupportNet Study With Results Obtained in Other Studies

Study	Participants (*n*)	Intrusion, Mean (SD)	Avoidance, Mean (SD)	Arousal, Mean (SD)	Total score, Mean (SD)
SupportNet study	Behavioral health providers working with military trauma (224)	8.91 (2.96)	13.33 (5.06)	9.68 (3.63)	31.91 (10.65)
Bride (2007)	Social workers (276)	8.18 (3.04)	12.58 (5.00)	8.93 (3.56)	29.69 (10.74)
Bride et al. (2007)	Child protective services workers (187)	10.97 (4.07)	15.64 (5.98)	11.58 (4.22)	38.20 (13.38)
Bride et al. (2009)	Substance abuse counselors (225)	8.83 (3.28)	13.14 (5.54)	9.27 (4.10)	31.20 (12.30)
Choi (2011a)	Providers for survivors of family or sexual violence (154)	9.10 (2.90)	13.40 (5.00)	9.5 (3.5)	32.07 (10.39)
Smith Hatcher et al. (2011)	Juvenile justice education workers (89)	10.64 (3.19)	15.73 (4.90)	11.37 (3.79)	37.74 (10.74)

In terms of secondary exposure, the providers indicated that, on average, during the course of their professional career, they treated seven different types of trauma (cf. diversity), worked with a few hundred traumatized patients (percentage of response categories for volume: none, 0%; 1 or 2, 1%; 10 or less, 2%; 50 or less, 12%; 100 or less, 18%; a few hundred, 54%; a few thousand, 13%), and treated traumatized patients for a few days a week (percentage of response categories for frequency: never, 0%; a few days in a year, 0%; 1 day a month, 2%; a few days a month, 6%; 1 day a week, 10%; a few days a week, 38%; every day, 44%). The providers declared that, in their professional career, approximately 63% of the patients were traumatized (cf. ratio) and 32% experienced military-related traumas. The appraisal of the impact of this indirect trauma exposure on the providers was negative (3.34 on a scale from 1 to 7, with 3 meaning "somewhat negative").

Prevalence of STS

Table 3 presents how many behavioral health providers met the diagnostic criteria for STS. The algorithm proposed by Bride (2007) follows *DSM-IV-TR* recommendations for a diagnosis of PTSD (APA, 2000) and includes criteria B (intrusion or re-experiencing), C (avoidance), and D (arousal) and their combinations. Criterion A (an indirect or direct exposure to trauma) was met by all participants as part of the inclusion criteria for this study. According to the algorithm, symptoms of STS included in the STSS are endorsed if the given corresponding item is scored 3 or higher on a scale from 1 to 5. At least one symptom must be endorsed to meet criterion B, three for criterion C, and two for criterion D.

Table 3 shows that despite being indirectly exposed to the traumatic history of patients, 33.9% of the participants did not meet any of the B, C, or D criteria for PTSD. However, 19.2% of the providers met all three core criteria for PTSD. The three occupational groups (counselors or psychotherapists, social workers, and clinical psychologists) did not differ in terms of meeting all three diagnostic criteria χ^2 (2, N = 224) = 1.48, p = 0.478, or in terms of the mean total STS scores, F(2,221) = 0.79, p = 0.455, η^2 = 0.007. Different combinations of two of the criteria were found in 22.8% to 29.5% of the study population. The criterion met most frequently was intrusion (57.6%), followed by arousal (35.3%) and avoidance (29.9%). Table 4 presents descriptive statistics for intensity of intrusion, avoidance, and arousal symptoms and for a total score on the STSS.

Correlates of STS

Further statistical analyses explored whether the participants' demographic, exposure-related, and work-related characteristics were related to STS. In the case of the categorical variables, a series of one-way analyses of variance were used to test for STS differences across sex, relationship status, profession, education levels, employment, military status, deployment, different types of therapeutic approaches used in work with patients (CBT, CPT, PE, or EMDR), and type of work setting (on-post versus off-post providers). Descriptive statistics for these variables are presented in Table 1. None of these characteristics had a significant effect on intensity of STS (all F's < 1.60 and p's > 0.207).

Correlational analysis (Pearson's r) conducted for continuous variables showed that several work- and exposure-related factors were associated with STS. As shown in Table 5, only one of five indices of indirect trauma exposure, the ratio of traumatized clients in one's professional career, was correlated with STS. The providers' personal history of trauma, being constrained by having too many patients, and too much paper work were also positively associated with STS. Finally, the providers' appraisal of impact of indirect exposure to trauma was negatively correlated with STS (*i.e.*, more negative appraisal correlated with higher level of symptoms).

In addition, a regression analysis was conducted with five significant correlates of STS entered as predictors of the STS symptoms. The regression equation was significant, F(5,218) = 16.14, p < 0.001, R^2 = 0.27. Multicollinearity was not a problem in these data (VIF ≤ 1.33). Overall, the predictors explained 27% of STS variance. Having too many patients (β = 0.27, p < 0.001), higher levels of direct exposure to trauma (β = 0.17, p = 0.004), and more negative appraisal of impact of indirect exposure (β = 0.33, p < 0.001) predicted higher frequency of STS symptoms. The effects of amount of paper work (β = 0.04) and the ratio of traumatized clients in one's professional career (β = 0.05) were negligible. Study 2 followed up these findings to compare our prevalence ratings with other samples.

STUDY 2: META-ANALYSIS

Several studies have evaluated the frequencies of STS across groups of behavioral health professionals. These studies relied on similar methods but reached different conclusions in terms of STS symptoms. One possible way to integrate the existing evidence would be to conduct a systematic review or meta-analysis, which collates all empirical evidence using the systematic procedure of search, extraction, and evaluation of studies to minimize researchers' biases. Compared with systematic review, meta-analysis accounts for the fact that analyzed studies may differ in terms of statistical power. In addition, meta-analysis allows for statistical estimation of the mean level of symptoms across the samples (weighted mean). It also allows for calculation of the confidence intervals (CIs), which, with the assumed probability level (usually 95%), indicate intervals within which the mean level of symptoms for the population should be included. These reference points might be very useful for diagnostic

TABLE 5. Correlations Between Study Variables

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Age	—													
2.	Work experience	0.77***	—												
3.	Too much paper work	0.03	0.05	—											
4.	Too many patients	−0.19**	−0.12	0.49***	—										
5.	Hours of individual clinical supervision or consultation per month	−0.34***	−0.35***	0.07	0.07	—									
6.	Hours of group clinical supervision or consultation per month	−0.28***	−0.31***	0.12	0.11	0.51***	—								
7.	Frequency of peer supervision	−0.25***	−0.13	0.05	0.09	0.31***	0.32***	—							
8.	Direct exposure	0.17*	0.12	0.16*	0.09	−0.02	0.06	0.01	—						
9.	Indirect exposure: diversity	0.09	0.09	−0.03	−0.08	−0.07	0.03	0.08	0.15*	—					
10.	Indirect exposure: volume	0.10	0.20**	0.15*	0.14*	−0.08	−0.11	0.15*	0.15*	0.26***	—				
11.	Indirect exposure: frequency	−0.06	−0.01	0.06	0.15*	0.11	−0.01	0.32***	0.07	0.15*	0.40***	—			
12.	Indirect exposure: ratio: percentage of traumatized patients	0.04	−0.01	0.05	0.08	0.04	0.04	0.09	0.15*	0.14*	0.27***	0.40***	—		
13.	Indirect exposure: ratio: percentage of patients describing a graphic military combat experience	−0.29***	−0.17*	0.02	0.27***	0.12	−0.09	0.19**	0.05	−0.10	0.17*	0.23***	0.30***	—	
14.	Appraisal of indirect trauma exposure	−0.10	−0.04	−0.09	−0.12	0.08	−0.06	0.15*	−0.01	0.17**	0.20**	0.08	−0.11	−0.10	—
15.	STS	0.00	0.02	0.23***	0.35***	0.06	0.09	−0.01	0.21***	−0.01	0.06	−0.08	0.14*	0.13	−0.37***

*$p < 0.05$.
**$p < 0.01$.
***$p < 0.001$.

TABLE 6. Meta-analysis Results for Severity of STS Symptoms

			Heterogeneity		95% CI for Mean		
STS	K	Mean	Q	I^2%	Lower Level	Upper Level	Z
Intrusion	6	9.41	87.84***	94.31	8.63	10.19	23.58***
Avoidance	6	13.93	52.50***	90.48	12.94	14.92	27.49***
Arousal	6	10.03	70.02***	92.86	9.20	10.86	23.76***
Total score	6	32.91	132.98***	96.24	29.51	36.31	18.96***

$N = 1155$. significant Q values indicate that variation in means across studies is due to heterogeneity of the studies rather than chance; I^2% indicates the percentage of the total variability in the analyzed studies due to true heterogeneity (*i.e.*, due to between-study variability); a low level of this index would indicate variability due to sampling error; significant Z values indicate that the estimated mean values are different from zero.

k indicates number of studies; mean, weighted mean value.

***$p < 0.001$.

purposes. The aim of study 2 was to compare the mean level of STS in the investigated population with the mean levels of STS in other populations.

Methods

Descriptive statistics found for behavioral health providers working with the military were compared with statistics obtained from previous studies in which STS was measured with the STSS. Articles cited in Table 4 were identified through searches of databases (PsychINFO, PILOT, MEDLINE, and ScienceDirect) for peer-reviewed articles published in English through April 2012. The only key word used for identification of research was the name of the scale: *Secondary Traumatic Stress Scale*. A number of criteria had to be met to be included in the meta-analytic review. Participants had to be indirectly exposed to trauma through their work. In addition, the article must include information about sample size, mean values, and standard deviations for each subscale of the STSS and for the total score.

Of the 27 articles identified and reviewed, 5 met the inclusion criteria. Most studies were excluded because, although these provided a total score for the STSS, these did not provide appropriate descriptive statistics for the intrusion, avoidance, and arousal criteria. The sample size for the individual studies included in the meta-analysis ranged from 89 to 276, and a total of 1155 participants were included in the meta-analysis.

Results

Table 6 displays the results of the meta-analysis. Significant results of heterogeneity test (Cochran's Q) indicated that variation in mean values across the studies is due to heterogeneity rather than chance; therefore, the random-effect meta-analysis method was applied. Most of the variability across the samples was due to between-studies variability ($I^2 > 90\%$) and not due to sampling errors. Across the samples, the 95% CI for the mean values of the STSS would be 8.53 to 10.51 for intrusion, 12.82 to 15.31 for avoidance, 9.06 to 11.15 for arousal, and 28.81 to 37.45 for total STSS score.

The mean values for intrusion, avoidance, arousal, and total score from the SupportNet study were contained in a range of respective CIs calculated in the meta-analysis. This indicates that the severity of STS symptoms in the SupportNet sample is similar to the severity of these symptoms in other investigated populations. This conclusion remains valid even if the results of the current study are excluded from the meta-analysis.

DISCUSSION

A logical extension of the psychological strain endured by military members who have completed deployments to Iraq and Afghanistan is the presence of STS symptoms in those who care for them. Previous research targeting clinicians working with civilian population showed that among those who were indirectly exposed to traumatic material through work, a sizeable percentage (15%–39%) experienced STS (Bride, 2007; Bride et al., 2007, 2009; Choi, 2011a; Dominguez-Gomez and Rutledge, 2009; Smith Hatcher et al., 2011; Quinal et al., 2009). The present study documents the level of STS in military behavioral health providers. A limited impact of indirect exposure to trauma at work on developing STS symptoms was found in approximately a third of military behavioral health providers, whereas one in five reported meeting all criteria of PTSD because of indirect exposure to trauma. Compared with rates of current PTSD among veterans (2%–17%; Richardson et al., 2010) or the general population (3.5%; Kessler et al., 2005) the prevalence observed in the present study is high. It may be assumed that the performance of different tasks (including those work related) may be affected by PTSD symptoms (cf. Wald and Taylor, 2009). Because symptoms of STS seem to be a common problem, military behavioral health providers may need easy access to effective psychosocial interventions (for overview, see Stergiopoulos et al., 2011), targeting the reduction of STS symptoms and therefore improving their work outcomes.

The meta-analytic results demonstrate similar rates of STS symptoms in the sample of military behavioral health providers and among other high-risk professions such as emergency and rescue workers, substance abuse counselors, and agency-based social workers (Argentero and Setti, 2011; Bride, 2007; Bride et al., 2009). The results of our meta-analysis, indicating similar levels of STS symptoms across the studies, support the validity of our findings and allow for cautious generalizations. A lack of differences across workers exposed to secondary trauma and providing services to various types of clients may indicate that the type of performed work (*e.g.*, social work, education, or counseling; working with traumatized families, offenders, military) may play a negligible role in explaining STS symptoms. On the other hand, although levels of STS are similar, its symptoms may be explained by different predictors across populations.

Our findings shed light on exposure-related work characteristics that may contribute to the development of STS. Across the indices of exposure, only the ratio of traumatized clients in one's professional career was associated with STS among the providers working with military patients. So far, research indicated that the percentage of traumatized clients may be a prevalent stressor among professionals working with traumatized clients (Bride et al., 2009). Voss Horrell et al. (2011) suggested that secondary exposure characteristics, such as years of experience in trauma treatment, total hours per week spent working with trauma patients, and caseload balance, may have a potential to affect clinicians working with veterans of Iraqi and Afghanistan operations. These suggestions,

however, were based on a review of scarce research conducted among providers serving civilian populations. The results of our study suggest that the multidimensional structure of secondary exposure at work should be taken into account when predicting STS.

Perhaps the most important correlate to consider refers to perceptions of the negative impact of trauma-related work. The importance of cognitive appraisals of significant environmental stressors (*i.e.*, trauma clinical work) is consistent with the general theories of stress and well-being (Lazarus and Folkman, 1984). Research conducted among workers providing services to civilian population and exposed to secondary trauma indicated that associations between stress appraisal and well-being may be particularly relevant among those with lower personal resources, such as self-efficacy (Prati et al., 2010). Future research should look for individual and organizational resources protecting behavioral health providers who perceive high negative impact of work on their own mental health.

As previously noted, job-related demands (*e.g.*, workload, organizational constraints) and resources (*e.g.*, support from peers or superiors) predict employees' well-being (Cieslak et al., 2007; Van der Doef and Maes, 1999). The present study indicated that a higher number of patients and more administrative paper work constitute important work-related demands, associated with higher levels of STS. Voss Horrell et al. (2011) listed case load size and a lack of availability of support as the potentially critical job-related demands influencing well-being of providers working with traumatized veterans of military operations in Iraq and Afghanistan. Our findings are in line with results reported by Devilly et al. (2009), in which job stress levels were found to be particularly important in predicting STS.

Work-related resources such as social support and peer supervision were unrelated to STS levels. This finding is in contrast to other research, suggesting that more support from colleagues and supervisory support were related to lower STS among workers providing services to civilians (Argentero and Setti, 2011; Choi, 2011b; Creamer and Liddle, 2005). Voss Horrell et al. (2011) also listed peer supervision among potential protective factors, relevant for the mental health of providers working with traumatized veterans of operations in Iraq and Afghanistan. Again, this suggestion was made on the basis of research conducted among providers working with civilian populations. One explanation for the discrepancies between the findings might be the unique nature of the chain of command in the supervision of military clinicians. Work stress research highlighted the role of support of managers/superiors in predicting employees' mental health (cf. Cieslak et al., 2007). Clearly, the role of work-related support from different sources (supervisors, co-workers, and managers) in predicting STS requires further research.

We found that the greater the number of direct exposure to trauma is, the higher the reported level of STS is. This observation is consistent with previous research, conducted among providers working with civilian clients (Pearlman and Mac Ian, 1995), and in line with the hypothesized determinants of mental health of providers working with military populations (Voss Horrell et al., 2011). What remains unclear is how personal trauma history interrelates with work-based demands, indirect exposure, and resources to influence STS. Future research should investigate whether particular types of trauma, such as childhood abuse (cf. Marcus and Dubi, 2006), may play a particularly salient role and moderate the impact of work-related secondary exposure.

Our study has several limitations. A cross-sectional design and convenience sampling do not allow for any causal conclusions. The measure used to capture direct personal exposure was developed for this study, and therefore, it has not been previously validated. Although applying assessment methods such as the Clinician-Administered PTSD Scale could be superior, an individual clinical assessment was not feasible for the present study. It should be noted that previous research that measured direct exposure and STS applied even more limited assessment methods such as "Do you have a trauma history?" (Pearlman and Mac Ian, 1995). Future research should use a standardized clinical interview approach to secure a more accurate assessment of trauma exposure. The present study focused on one negative effect of indirect trauma exposure (*i.e.*, STS as a set of PTSD-like symptoms), whereas other possible consequences or conceptualizations (*e.g.*, compassion fatigue or vicarious traumatization) were not analyzed. Consequently, the findings are limited to STS. Further longitudinal studies targeting representative samples of mental health providers serving military men and women are required.

CONCLUSIONS AND FUTURE DIRECTIONS

Previous research targeting behavioral health providers working with military patients has been limited (cf. Peterson et al., 2009). Hypothesized risk and resource factors affecting the well-being of behavioral health providers working with the military were based on findings predominantly referring to civilian providers working with civilian clients (Voss Horrell et al., 2011). Our study is among the first showing empirical evidence for high prevalence of STS (19.2%) among providers working with the military. The results of the meta-analysis contribute to the literature showing that the rates of STS prevalence are similar across samples of workers performing different types of duties, in various populations of clients. Further, the present research highlights the need for multidimensional evaluation of secondary exposure, with only one dimension (ratio, *i.e.*, high percentage of traumatized clients in one's professional career) emerging as a significant correlate of STS. In line with research conducted among workers providing services to traumatized civilians, we found that personal history of trauma and constraints related to patient load are associated with STS levels.

Further theory-based research is needed to evaluate the role of risk and protective factors related to psychological resiliency factors (Maguen et al., 2008) such as self-efficacy (Prati et al., 2010) or support from superiors (Cieslak et al., 2007) in predicting STS. There is a lack of studies investigating how STS interfaces with other critical negative (*e.g.*, burnout) and positive (*e.g.*, posttraumatic growth) outcomes. Such studies will provide a critical insight into the mechanisms responsible for the onset and the maintenance of mental health problems and thus inform the development of theory- and evidence-based supportive interventions, needed for military behavioral health providers.

DISCLOSURES

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Appendix III: Paper: Meta-analysis of the relationship between job burnout and secondary traumatic stress among workers with indirect exposure to trauma.

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A Meta-Analysis of the Relationship Between Job Burnout and Secondary Traumatic Stress Among Workers With Indirect Exposure to Trauma

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The study provides a systematic review of the empirical evidence for associations between job burnout and secondary traumatic stress (STS) among professionals working with trauma survivors, indirectly exposed to traumatic material. Differences in the conceptualization and measurement of job burnout and STS were assumed to moderate these associations. A systematic review of literature yielded 41 original studies, analyzing data from a total of 8,256 workers. Meta-analysis indicated that associations between job burnout and STS were strong (weighted $r = .69$). Studies applying measures developed within the compassion fatigue framework (one of the conceptualizations of job burnout and STS) showed significantly stronger relationships between job burnout and STS, indicating a substantial overlap between measures (weighted $r = .74$; 55% of shared variance). Research applying other frameworks and measures of job burnout (i.e., stressing the role of emotional exhaustion) and STS (i.e., focusing on symptoms resembling posttraumatic stress disorder or a cognitive shift specific for vicarious trauma) showed weaker, although still substantial associations (weighted $r = .58$; 34% of shared variance). Significantly stronger associations between job burnout and STS were found for: (a) studies conducted in the United States compared to other countries; (b) studies using English-language versions of the questionnaires compared to other-language versions, and (c) research in predominantly female samples. The results suggest that, due to high correlations between job burnout and STS, there is a substantial likelihood that a professional exposed to secondary trauma would report similar levels of job burnout and STS, particularly if job burnout and STS were measured within the framework of compassion fatigue.

Keywords: secondary trauma, secondary exposure, secondary traumatic stress, job burnout, meta-analysis, compassion fatigue

The concept of job burnout was originally developed to assess negative consequences of work-related exposure to a broad range of stressful situations experienced by human services employees (Freudenberger, 1974; Maslach, 1976; Maslach, Schaufeli, & Leiter, 2001). In particular, the provision of care to traumatized populations may be infused with high levels of burnout among mental health care providers and mental health care administrators (Newell & MacNeil, 2011). Burnout among health care providers relates to their well-being, the quality of life of their patients, and caring effectiveness (Cheung & Chow, 2011).

Recent research on mental health providers has extended the focus beyond job burnout to investigate the consequences of exposure to specific stressors, such as contact with people who have experienced traumatic events, exposure to graphic trauma content (reported by the survivor), or exposure to people's cruelty to one another (Pearlman & Saakvitne, 1995). These job-related

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stressors, specific to human service professionals working with trauma victims or survivors, have been labeled with several terms, such as *secondary exposure* or *indirect exposure to trauma*.

Professionals exposed to trauma indirectly, through their work, may suffer from consequences or symptoms unique to this occupational group, compared to other occupations (Beck, 2011). These specific consequences of indirect trauma exposure have been conceptualized as secondary or vicarious traumatization (McCann & Pearlman, 1990), secondary posttraumatic stress disorder (PTSD; Bride, Robinson, Yegidis, & Figley, 2004), and compassion fatigue (Figley, 2002). Significant elevation of symptoms of compassion fatigue may be expected among mental health providers, including those working in the public sector setting (Newell & MacNeil, 2011).

Secondary trauma or secondary PTSD may occur due to work-related indirect exposure and in the context of family-related indirect exposure. Besides human services workers, populations at risk for indirect exposure include family members or intimate partners of survivors of various types of trauma, for example, veterans or active duty soldiers, motor vehicle trauma survivors, or abuse survivors (cf. Lambert, Engh, Hasbun, & Holzer, 2012). The present study focused on consequences of work-related exposure and, therefore, our analyses excluded family-related indirect exposure.

The ongoing discussion about the constructs of burnout, compassion fatigue, and secondary traumatization (Jenkins & Baird, 2002) has shown that although there are subtle differences between them, they are also partially overlapping. So far, the debate has been dominated by narrative analyses of these differences with limited empirical evaluation (R. E. Adams, Boscarino, & Figley, 2006; Jenkins & Baird, 2002; Sabo, 2011; Thomas & Wilson, 2004). In contrast, comprehensive analyses empirically testing similarities and differences between respective constructs, and thus providing overarching conclusions across the recent research, are clearly needed. To fill this void, our meta-analysis investigated the relationships among job burnout and psychosocial consequences of a secondary exposure to trauma (i.e., compassion fatigue, secondary PTSD, or vicarious trauma; collectively, secondary traumatic stress [STS]) in professionals working with trauma survivors.

Job Burnout

Job burnout may be defined as a prolonged three-dimensional response to job stressors, encompassing exhaustion, cynicism, and inefficacy (Maslach et al., 2001). In contrast to the proposal of Maslach et al. (2001), three related approaches suggest that job burnout might be reduced to a single common experience: exhaustion. The first of these approaches defines as physical, emotional, and mental exhaustion (Malach-Pines, 2005). According to the second conceptualization, burnout concerns physical and psychological fatigue and exhaustion (Kristensen, Borritz, Villadsen, & Christensen, 2005), measured in a domain-specific context. The third approach defines burnout as physical, emotional energy, and cognitive exhaustion, which may result in depletion of coping resources (Shirom & Melamed, 2006).

Not all contemporary theorists, however, have landed on the one-dimensional exhaustion frame for burnout. A two-dimensional job burnout framework proposed by Demerouti, Bakker, Vardakou, and Kantas (2003) focuses on exhaustion and disengagement (i.e., distancing oneself from work and negative attitude toward the work-related objects and tasks). Demerouti et al. (2003) proposed a relatively broad conceptualization of burnout, defined as long-term consequences of prolonged exposure to job demands. Obviously, there is a potential overlap between cynicism and negative attitude toward work bringing this approach closer to that of Maslach et al. (2001).

The variety of conceptualizations and operationalizations of the job burnout construct raises many concerns. Scientific advancement relies on agreed on definitions and measurement. In the case of job burnout, there appears to be consensus only related to the exhaustion component. Our meta-analytic review, including moderator analyses, provides critical information to clarify some of these conceptual challenges. The area of STS also falls victim to construct definition confusion.

Secondary Traumatic Stress

In the present study, we use the umbrella term *secondary traumatic stress* to discuss such effects of secondary exposure as secondary PTSD (Bride et al., 2004), vicarious traumatization (McCann & Pearlman, 1990), and the STS aspect of compassion fatigue (Figley, 2002).

STS (also called secondary PTSD) is usually conceptualized as reactions resembling PTSD, and thus includes symptoms that are parallel to those observed in people directly exposed to trauma (Bride et al., 2004). There are three clusters of symptoms: intrusive reexperiencing of the traumatic material, avoidance of trauma triggers and emotions, and increased physical arousal (Bride et al., 2004). These consequences are assumed to result from indirect exposure to trauma among human services providers whose clients or patients suffered from primary exposure.

The concept of vicarious trauma focuses on cognitive effects of indirect exposure (Pearlman, 1996). A negative shift in worldview occurs as a result of an empathetic engagement with clients' or patients' traumatic material (Pearlman, 1996). The symptoms of vicarious trauma include disturbances in the professional's cognitions in five areas (i.e., safety, trust, esteem, intimacy, and control), in reference to oneself and others (Pearlman & Saakvitne, 1995).

Another theoretical framework uses the term *compassion fatigue* to explain the consequences of secondary exposure to trauma at work (Figley & Kleber, 1995). Compassion fatigue is defined as a reduced empathic capacity or client interest manifested through behavioral and emotional reactions from exposure to traumatizing experiences of others (R. E. Adams et al., 2006). Initially, the broad definition of compassion fatigue (Figley & Kleber, 1995) focused on any emotional duress experienced by persons having close contact with a trauma survivor. More recently, aspects of burnout were additionally incorporated into the compassion fatigue concept capturing the element of energy depletion (Stamm, 2010).

Of import, the definition of job burnout included in compassion fatigue differs from the more common approaches reviewed earlier that focus more on exhaustion (e.g., Demerouti et al., 2003; Maslach et al., 2001). Within the compassion fatigue framework, burnout is described as being "associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively" (Stamm, 2010, p. 13). It is not completely clear

whether the resulting construct of compassion fatigue is unitary or composed of two distinct dimensions (Figley & Stamm, 1996; Jenkins & Baird, 2002), although some evidence has suggested a two-dimension structure (R. E. Adams et al., 2006). Compassion fatigue is measured with the Professional Quality of Life (ProQOL; Stamm, 2010). Compared to other job burnout scales, the burnout items of the ProQOL are not focused on exhaustion symptoms, but, instead, refer to lack of well-being, negative attitudes toward work, work overload, or a lack of self-acceptance.

Burnout and other consequences of secondary exposure to trauma (e.g., secondary PTSD and compassion fatigue) should be moderately related, because their theoretical frameworks each have a different emphasis. Besides exposure to clients' reports of their traumatic experience, burnout is related to workplace structural strains and chronic organizational issues (Lee, Lim, Yang, & Lee, 2011). PTSD-like symptoms of secondary PTSD and vicarious traumatization are conceptually linked only to those workplace factors that refer to indirect exposure to trauma content (Jenkins & Baird, 2002; Schauben & Frazier, 1995). In contrast, compassion fatigue refers to a broad range of emotional or cognitive consequences of secondary exposure. We believe that differences in defining and measuring the effects of indirect traumatization may be crucial for testing the relationship between job burnout and other consequences of secondary exposure to trauma.

Collectively, the research on burnout and negative consequences related to secondary exposure to trauma suffers from definitional and measurement challenges. Understanding possible moderators, such as culture and gender, may offer important insights.

The Role of Culture, Gender, and the Type of Work-Related Exposure to Trauma

Professionals from different countries performing the same job may differ in job burnout. For example, Japanese nurses reported lower levels of personal accomplishment and higher levels of emotional exhaustion and depersonalization compared to nurses from the United States, Canada, the United Kingdom, Germany, and New Zealand, with Russian and Armenian nurses reporting the lowest levels of job burnout (Poghosyan, Aiken, & Sloane, 2009). A European study showed that the highest percentages of family doctors with job burnout were identified in the United Kingdom, Italy, and Greece (Soler et al., 2008). Professionals from Fiji or Brazil may suffer from higher levels of job burnout than professionals in Israel, France, Germany, or China (Perrewé et al., 2002).

The concepts of job burnout and compassion fatigue were developed in the United States, and a large proportion of studies investigating the associations between these constructs were conducted in North America. However, a growing number of studies have discussed data collected in other countries (Thoresen, Tønnessen, Lindgaard, Andreassen, & Weisæth, 2009). Trauma researchers have suggested that culture is a critical factor to consider (Marshall & Suh, 2003). The sociocultural context may determine the outcomes of exposure in several ways, such as shaping emotional experiences and emotional processing (Bracken, 2001; Marshall & Suh, 2003). Furthermore, critical determinants of developing the consequences of secondary exposure to trauma, such as existing policies, social resources, and organizational characteristics (Voss Horrell, Holohan, Didion, & Vance, 2011), are likely to vary across countries. Thus, our research investigated the moderating role of cultural context (defined as the country of data collection) in the relationship between burnout and other consequences of indirect trauma exposure.

Gender is also important to consider. Female professionals are likely to report higher levels of aspects of burnout referring to the depletion of emotional reserves (Watts & Robertson, 2011) or higher levels of compassion fatigue (Sprang, Clark, & Whitt-Woosley, 2007). The associations between gender and PTSD-like symptoms among professionals with secondary exposure are unclear (Sprang, Craig, & Clark, 2011). Furthermore, the effects of gender on burnout may be higher in the United States than in European countries, where there are smaller reported differences in burnout levels among men and women (Purvanova & Muros, 2010). It remains unknown, however, whether gender may moderate the associations between job burnout and STS.

Some occupations are characterized by a low likelihood of direct exposure to work-related trauma (e.g., therapists), in contrast to professionals who work at the epicenter of trauma (e.g., paramedics, rescue workers) and thus may be also directly exposed (Argentero & Setti, 2011; Halpern, Maunder, Schwartz, & Gurevich, 2011). Being a member of an occupational group with an increased likelihood of both direct and indirect exposure to work-related trauma may be an important determinant of STS and burnout (Palm, Polusny, & Follette, 2004). The present study investigated the moderating effect of the type of work-related trauma exposure, with the type of occupation as the indicator of the exposure.

Aims

Although research evidence for the relationships between job burnout and other consequences of indirect trauma exposure (i.e., PTSD-like symptoms, compassion fatigue, vicarious traumatization) among workers exposed to secondary trauma is accumulating, the overarching synthesis of these relationships is missing. Systematic review and meta-analytic strategies offer an option for evaluating the available literature. This study aimed at systematically reviewing and meta-analyzing the strength of associations between job burnout and other psychosocial consequences of work-related indirect exposure to trauma in professionals working with trauma survivors. It was hypothesized that these associations may be moderated by: (a) the type of measurement, (b) the conceptualization of job burnout and STS, (c) gender, and (d) the types of occupations involving primary and secondary exposure, compared to types of occupations involving only secondary exposure. To evaluate cultural context, we explored differences between the findings obtained in the United States and other countries, as well as the differences in findings obtained for English-language measures versus other-language measures.

Method

Literature Search

A systematic database search of studies on STS and job burnout was conducted for independent studies available before 2012. The search included the following databases: PILOTS, ScienceDirect, Scopus, and Web of Knowledge. Combinations of the keywords related to *job burnout* (*burnout* or *burn-out*) and *secondary trau-*

matic stress (*trauma**, *posttrauma**) were used, with asterisks indicating that a keyword may consist of the stem and any suffix (e.g., *traumatic*). To ensure that various concepts and terms referring to STS were included, we also used such keywords as *compassion fatigue* and *PTSD*. Manual searches of the reference lists were conducted. If the original article did not provide all details essential for meta-analyses (e.g., reliability, correlation coefficients), the authors of original studies were asked to provide respective information. To minimize a possible bias, at least two of the authors (K. S., R. C., A. D., or E. M.) were involved at all stages of data extraction, coding, synthesis, and analysis. The Cochrane systematic review methods were applied (Higgins & Green, 2008).

Inclusion Criteria, Exclusion Criteria, and Data Abstraction

The following inclusion criteria were implemented: (a) STS and job burnout were measured at some time point in the original study; (b) the relationship between STS and job burnout was assessed, or authors provided appropriate statistics on request; (c) articles reported statistics that could be converted into Pearson's coefficient (e.g., t test, F test, χ^2, z test); (d) original studies enrolled workers performing job tasks involving contact with traumatized clients/patients or traumatic material. English-language publication restriction was applied (although the measurement itself could be in a non-English language). Dissertations and book chapters were excluded. Studies applying qualitative methods, narrative reviews, and research on nonworkers (e.g., student samples) were excluded. When two or more studies used the same sample, only one publication was included. Details of the selection process are presented in Figure 1. The initial search resulted in 337 articles. The selection processes resulted in 45 studies meeting all inclusion criteria. However, four of those studies were excluded from further analysis, because they were identified as outliers, with z scores greater than 10 or less than −10 (Alkema, Linton, & Davies, 2008; Backholm & Björkqvist, 2010; Lauvrud, Nonstad, & Palmstierna, 2009; Maunder et al., 2006). Thus, 41 original studies were analyzed (see Table 1).

Descriptive data (including country where a study was conducted, sample size, participants' gender and occupations, measurement, and design) were extracted and verified by two of the authors. Relevant statistics, including reliability coefficient, and measures of association (or statistics allowing for computing these associations) were also retrieved. Any disagreement in the processes of data extraction was resolved by a consensus method.

Coding

Two main categories of negative consequences of secondary exposure to trauma were analyzed. The first main category, called STS, was defined as negative emotional or cognitive consequences of indirect exposure to trauma, such as (a) PTSD-like symptoms measured by the Secondary Trauma Stress Scale (Bride et al., 2004), the Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979), or the Impact of Event Scale–Revised (Weiss & Marmar, 1997); (b) vicarious trauma—a cognitive shift in worldview, defined by Pearlman (1996) and measured by the Traumatic Stress

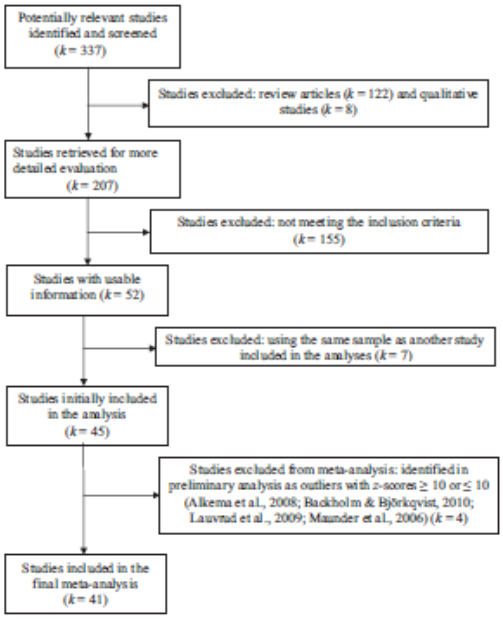

Figure 1. Selection of studies for the meta-analysis.

Institute Belief Scale (Pearlman, 1996); or (c) an aspect of compassion fatigue, defined by Figley and coworkers (e.g., Figley & Stamm, 1996) and measured by the Secondary Traumatic Stress subscale of the ProQOL (Stamm, 2000), the Compassion Satisfaction and Fatigue Test (CSFT; cf. Figley & Stamm, 1996), the Compassion Fatigue Questionnaire (CFQ; Figley & Kleber, 1995), or the Compassion Fatigue Scale–Revised (CFS-R; R. E. Adams et al., 2006).

Job burnout, the second key category analyzed, was defined as consequences of work related-stress focusing on: (a) the emotional exhaustion component of job burnout, as measured by the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1997), the Oldenburg Burnout Inventory (OLBI; Halbesleben & Demerouti, 2005), the Rescue Worker Burnout Questionnaire (Musa & Hamid, 2008), the Burnout Measure (Malach-Pines, 2005), or the Copenhagen Burnout Inventory (Kristensen et al., 2005); or (b) a concept derived from the compassion fatigue framework and broadly defined by Figley and coworkers (e.g., Figley & Stamm, 1996) as referring to lack of well-being, negative attitudes toward work, work overload, or a lack of self-acceptance, measured by the Job Burnout subscales of the ProQOL (Stamm, 2010), the CSFT (cf. Figley & Stamm, 1996), the CFQ (Figley & Kleber, 1995), or the CFS-R (R. E. Adams et al., 2006).

The moderating factors, referring to the measurement, theoretical framework, cultural factors (i.e., country, language), and gender, were combined into the following categories: (a) the type of measurement used for STS assessment (measures of cognitive shift or PTSD-like symptoms vs. measures of compassion fatigue); (b) the type of assessment of job burnout (the ProQOL Burnout

Table 1
Summary of the Studies Included in the Meta-Analysis

Study (first author, publication year)	*N* (% men)	Occupation	Study design	STS measure (α)	Job burnout measure (α)	Country	*r*
K. B. Adams (2001)	185 (18)	Clinical social workers	Cross-sectional	TSI Belief Scale (.93)	MBI (.75, .78, .90)	United States	.494
R. E. Adams (2006)	236 (20)	Social workers	Cross-sectional	CFS-R (.80)	CFS-R (.90)	United States	.642
Argentero (2011)	781[a] (58)	Rescue workers	Cross-sectional	STSS (.82)	MBI (.75, .81, .86)	Italy	.751[a]
Ben-Porat (2011)	214[a] (15)	Social workers	Cross-sectional	STSS (.88)[a]	Burnout Measure (.92)[a]	Israel	.878[a]
Berger (2011)	80 (0)	Well baby clinic nurses	Longitudinal	ProQOL (.77–.79)	ProQOL (.77–.79)	Israel	.505[a]
Birck (2002)	25 (40)	Professionals at treatment center for torture victims	Cross-sectional	CSFT (.87–.90)	CSFT (.87–.90)	Germany	.881
Burtson (2010)	126 (12)	Nurses	Cross-sectional	ProQOL (.81)	ProQOL (.75)	United States	.795
Carmel (2009)	106 (47)	Therapists	Cross-sectional	ProQOL (.81)	ProQOL (.79)	United States	.825
Chang (2011)	102 (100)	Soldiers	Cross-sectional	ProQOL (.68)	ProQOL (.65)	China	.827
Circenis (2011)	129 (NA)	Nurses	Cross-sectional	ProQOL (.81)[b]	MBI (.71, .79, .90)[b]	Latvia	.719
Cohen (2006)	37 (NA)	Social workers	Cross-sectional	CFQ (.80)	CFQ (.84)	Israel	.720
Collins (2003)	13 (46)	Health care workers	Longitudinal	CSFT (.80)	CSFT (.86)	Ireland	.941
Conrad (2006)	355[a] (10)	Child protection workers	Cross-sectional	CSFT (.84)	CSFT (.84)	United States	.842[a]
Craig (2010)	532 (34)	Trauma therapists	Cross-sectional	ProQOL (.81)	ProQOL (.73)	United States	.663
Devilly (2009)	150 (29)	Mental health professionals	Cross-sectional	STSS (.93)	CBI (.85, .86, .87)	Australia	.625
Eastwood (2008)	57 (25)	Childcare workers	Cross-sectional	ProQOL (.80)	ProQOL (.72)	United States	.771
Flannelly (2005)	149 (54)	Chaplains	Cross-sectional	ProQOL (.87)	ProQOL (.83)	United States	.777
Galek (2011)	331 (55)	Chaplains	Cross-sectional	CSFT (.83)	CSFT (.85)	Canada, United States	.190
Gibbons (2011)	62 (NA)	Social workers	Cross-sectional	ProQOL (.81)[b]	ProQOL (.75)[b]	England	.616
Halpern (2011)	189 (62)	Ambulance workers	Cross-sectional	IES-R (.91)	MBI (.83)[a]	Canada	.454[a]
Hatcher (2010)	50 (29)	Clinicians for sexual offenders	Cross-sectional	ProQOL (.81)[b]	ProQOL (.75)[b]	Australia	.648[a]
Jenkins (2002)	99 (4)	Counselors	Cross-sectional	CSFT (.84)	MBI (.81, .91, .92)	United States	.435
Kadambi (2004)	211 (16)	Therapists	Cross-sectional	IES (.88)[b]	MBI (.71, .79, .90)[b]	Canada, United States	.326
Killian (2008)	104 (21)	Therapists	Cross-sectional	ProQOL (.86)[a]	MBI (.88)[a]	United States	.690[a]
Kraus (2005)	90 (43)	Mental health professionals	Cross-sectional	CSFT (.85)	CSFT (.80)	United States	.788
LaFauci Schutt (2011)	184 (65)	Emergency management professionals	Cross-sectional	PCL-C (.94)	ProQOL (.73)	United States	.676
Lawson (2011)	506 (21)	Counselors	Cross-sectional	ProQOL (.80)	ProQOL (.78)	United States	.776[a]
Meadors (2009–2010)	167 (14)	Pediatric health care providers	Cross-sectional	STSS (.91)	ProQOL (.66)	United States	.813
Mitani (2006)	243 (97)	Firefighters	Cross-sectional	IES-R (.94)[b]	MBI (.81, .85, .87)[b]	Japan	.396
Musa (2008)	53 (49)	Aid workers	Cross-sectional	ProQOL (.87)	RWBQ (.73)	Sudan	.602
Perez (2010)	28 (75)	Law enforcement investigators	Cross-sectional	STSS (.97)	MBI (.69, .85, .90)	United States	.745
Perron (2006)	59 (10)	Forensic interviewers	Cross-sectional	STSS (.93)[b]	OLBI (.80)[b]	United States	.643
Pietrantoni (2008)	961 (72)	First responders	Cross-sectional	ProQOL (.80)	ProQOL (.86)	Italy	.687
Potter (2010)	154 (NA)	Oncology health care providers	Cross-sectional	ProQOL (.80)	ProQOL (.72)	United States	.741[a]
Prati (2010)	569 (78)	Rescue workers	Cross-sectional	ProQOL (.71)	ProQOL (.80)	Italy	.638
Robins (2009)	314 (18)	Child health care providers	Cross-sectional	CSFT (.84–.90)	CSFT (.84–.90)	United States	.756
Severn (2012)	82 (NA)	Audiologists	Cross-sectional	ProQOL (.81)	ProQOL (.69)	New Zealand	.831
Simon (2005)	21 (5)	Oncology social workers	Cross-sectional	CSFT (.87)	CSFT (.90)	United States	.531
van der Ploeg et al. (2003)	84 (68)	Forensic doctors	Cross-sectional	IES (.92)	MBI (.79, .80, .86)	Netherlands	.256
van der Ploeg & Kleber (2003)	123 (86)	Ambulance personnel	Longitudinal	IES (.92)	MBI (.70, .76, .86)	Netherlands	.323
Weiniger (2006)	185[a] (79)	Surgical physicians	Cross-sectional	PSS-SR (.68)[a]	MBI (.36, .44, .72)[a]	Israel	.623[a]

Note. STS = secondary traumatic stress; CFS-R = Compassion Fatigue Scale–Revised; TSI Belief Scale = Traumatic Stress Institute Belief Scale; MBI = Maslach Burnout Inventory; STSS = Secondary Traumatic Stress Scale; ProQOL = Professional Quality of Life Scale; CSFT = Compassion Satisfaction and Fatigue Test; NA = not available; CFQ = Compassion Fatigue Questionnaire; CBI = Copenhagen Burnout Inventory; IES-R = Impact of Event Scale–Revised; IES = Impact of Event Scale; RWBQ = Rescue Worker Burnout Questionnaire; OLBI = Oldenburg Burnout Inventory; PCL-C = Posttraumatic Stress Disorder Checklist–Civilian Version; PSS-SR = PTSD Symptom Scale–Self-Report.
[a] Information not reported in articles, but provided on the authors' request. [b] Information not reported in articles, therefore, drawn from another study.

subscale vs. other job burnout instruments, such as the MBI and the OLBI, which have clearly defined emotional exhaustion as a key component); (c) the theoretical framework (the compassion fatigue approach vs. other approaches to job burnout and STS), (d) the country where the study was conducted (the United States vs. other countries), (e) the continent where the study was conducted (North America vs. others), (f) the measurement language (English or others), (g) gender (predominantly male sample consisting of at least 75% men vs. predominantly female sample consisting of at least 75% women), (h) occupations with higher likelihood of both direct and indirect work-related exposure (rescue/emergency workers, nurses, social workers working with victims of missile attacks, chaplains working with victims of September 11, ambulance workers, pediatric care workers, firefighters, interna-

tional aid workers, first responders, forensic doctors, and surgical physicians) and occupations that may involve only indirect work-related trauma exposure (therapists, child protection workers, child care workers, chaplains, social workers, law enforcement exposed to disturbing media images, and forensic interviewers of abused children). In some cases, the same occupation groups (social workers and chaplains) were classified into different categories, depending on professional tasks described in original studies.

Data Analysis

The statistical analysis followed the procedure described by Hunter and Schmidt (2004). Attenuation due to the measurement error was corrected. The cumulative effect size was computed using the random-effect model method (Field & Gillett, 2010). The overall effect sizes, heterogeneity, and effect of the moderators (i.e., measurement, theoretical framework, country/continent, language, and gender) on the relationship between STS and job burnout were examined using Comprehensive Meta-Analysis software (Borenstein, Hedges, Higgins, & Rothstein, 2005). All analyses were sufficiently powered (above .80).

Pearson's correlation was used as the effect size indicator. When the original study provided multiple Pearson's correlations between STS and job burnout (e.g., for separate subscales), a mean Pearson's correlation was calculated (Hunter & Schmidt, 2004). When several measures of STS were applied in the original study, a measure other than a ProQOL subscale was used to estimate Pearson's coefficient for STS–job burnout association. The direction of a correlation involving the MBI Personal Accomplishment subscale was reversed to create positive associations between these subscales. If the original study provided alphas for subscales only, a mean Cronbach's alpha for a total score was calculated. When no Cronbach's alpha was available, it was obtained from original psychometric studies. Robustness of the calculated effect size against the effect of unpublished null results was assessed using the fail-safe *N* test (Rosenthal, 1979). To address this file drawer problem, the number of unpublished studies that were necessary to produce a nonsignificant result was calculated.

Results

Description of Analyzed Material

Table 1 displays information about samples, procedures, and measurement applied in 41 original studies. Overall, data from 8,256 workers were analyzed. Sample sizes varied from 13 to 961 participants, with an average of 198.63 (SD = 205.48) and median of 129. The average sample consisted of 59.03% women (SD = 28.35), with a majority of studies (82.93%; k = 34) targeting mixed-gender samples. Only two studies were homogeneous in terms of gender (k = 1, 100% male participants; k = 1, 100% female participants). Gender frequencies were missing in five studies. Data were collected in various professional groups such as therapists, mental health professionals (including social workers), and counselors (36.58%; k = 15); emergency, ambulance, or rescue workers (12.20%; k = 5); child care workers and child health care providers (9.76%; k = 4); nurses (7.32%; k = 3); forensic specialists (4.88%; k = 2); chaplains (4.88%; k = 2); and other noncategorized professionals (24.39%; k = 10).

Almost half (46.34%; k = 19) of the original research was conducted in the United States; 22 studies (53.66%) took place in North America. Four studies (9.76%) were conducted in Israel, three in Italy (7.32%), two in Australia (4.88%), and two in the Netherlands (4.88%). There were also two multicountry studies (4.88%) conducted both in Canada and the United States. Three studies (7.32%) took place in Africa or Asia. An English-language version of the questionnaires was applied in 65.85% (k = 27) of the studies.

The most popular measures used to assess STS stem from the compassion fatigue framework (Figley & Stamm, 1996). These ProQOL-related measures were used in 65.85% of studies (k = 27) and among 5,343 respondents (64.72% of the total sample). The most popular questionnaires used to assess job burnout also stem from the compassion fatigue approach to job burnout (i.e., ProQOL-related measures). They were applied in 60.98% of studies (k = 25), with 5,409 (65.51% of the total sample) professionals completing respective measures. Overall, ProQOL was used in 34.15% of studies (k = 14) to assess both STS and burnout constructs.

Associations Between STS and Job Burnout

The main research question dealt with the associations between STS and job burnout. The meta-analysis results conducted from 41 original studies indicated that the average association between these two variables was positive and the effect size was large (weighted r = .69; see Table 2). The coefficient of determination (r^2) was .48. The analysis of the fail-safe N showed that 10,603 studies with null results were needed to produce a nonsignificant association between STS and job burnout. The following analyses tested the moderating role of the measurement, the theoretical framework, the country, the continent, the language of data collection, gender of professionals taking part in the studies, and the type of occupation (likely to be directly and indirectly exposed at work compared to those who are likely to be only indirectly exposed at work).

Measurement of STS as the moderator. The original captured studies were divided into two categories on the basis of the type of measurement used to assess STS: (a) PTSD-like symptoms or (b) a measurement referring to compassion fatigue, based on a broader conceptualization of STS proposed by Figley and colleagues (cf. Figley & Stamm, 1996; R. E. Adams et al., 2006). The results of the moderator analysis showed that the effect sizes of the relationship between STS and job burnout were dependent on the type of STS assessment, with ProQOL-related measures having a stronger association (r^2 = .53) than measures assessing PTSD-like symptoms (r^2 = .37; see Table 2).

Measurement of job burnout as the moderator. The original studies were divided into two categories on the basis of the type of job burnout measurement used in the studies: (a) the measures stressing the role of exhaustion and (b) the subscales of ProQOL and related measures, based on a broader burnout concept, proposed by Figley and coworkers (cf. Figley & Stamm, 1996). The results showed that the relationship between STS and job burnout was moderated by the type of job burnout assessment, with ProQOL-related measures producing a significantly stronger

Table 2
Results of Meta-Analysis of the Relationship Between Job Burnout and Secondary Traumatic Stress: Overall and Moderator Effects

Measures	r[a]	r range[b]	r 95% CI[c]	N	k[d]	Q[e]	I^2 (%)[f]	Fail-safe N[g]	t[h]
Overall effect	.691	.252–.941	[.647, .731]	8,256	41	478.49*	91.64	10,603	—
Moderator effects									
Measurement									
STS measure									39.96**
ProQOL or related	.729	.435–.941	[.693, .762]	5,343	27	153.94*	83.11	14,138	
STS as PTSD-like symptoms	.608	.252–.878	[.483, .709]	2,913	14	287.43*	95.48	4,829	
Job burnout measure									
ProQOL-related vs. other measures									52.33**
ProQOL or related	.744	.505–.941	[.710, .775]	5,409	25	142.39*	83.15	14,163	
Other	.589	.252–.878	[.471, .687]	2,847	16	273.58*	94.52	4,817	
ProQOL-related vs. MBI									70.81**
ProQOL or related	.744	.505–.941	[.710, .775]	5,409	25	142.39*	83.15	14,163	
MBI	.532	.252–.751	[.397, .645]	2,371	12	177.69*	93.81	2,358	
ProQOL-related vs. other burnout measures (excluding MBI or ProQOL-related)									3.18*
ProQOL or related	.744	.505–.941	[.710, .775]	5,409	25	142.39*	83.15	14,163	
Other burnout measures (excluding MBI)	.731	.602–.878	[.527, .856]	476	4	37.68*	92.04	431	
MBI vs. other burnout measures (excluding MBI or ProQOL-related)									22.01**
MBI	.532	.252–.751	[.397, .645]	2,371	12	177.69*	93.81	2,358	
Other burnout measures (excluding MBI or ProQOL-related)	.731	.602–.878	[.527, .856]	476	4	37.68*	92.04	431	
Framework applied									
Compassion fatigue vs. other approaches									51.18**
Only compassion fatigue framework	.744	.505–.941	[.707, .776]	4,958	23	132.03*	83.34	9,879	
No measure from the compassion fatigue framework	.578	.252–.878	[.426, .699]	2,462	12	261.60*	95.80	3,029	
Compassion fatigue vs. mixed approach									44.69**
Only compassion fatigue framework	.744	.505–.941	[.707, .776]	4,958	23	132.03*	83.34	9,879	
At least one measure from other framework	.612	.252–878	[.509, .697]	3,298	18	299.43*	94.32	7,033	
Cultural factors									
Country									18.00**
United States	.725	.435–.842	[.678, .767]	3,572	19	129.17*	86.07	2,698	
Other countries	.675	.256–.941	[.604, .736]	4,132	20	245.87*	92.27	10,483	
Continent									3.79**
North America (United States and Canada)	.697	.252–.842	[.636, .748]	4,313	22	252.03*	91.67	5,846	
Countries from other continents	.685	.256–.941	[.615, .745]	3,943	19	224.18*	91.97	9,797	
Language of applied measures									14.22**
English	.706	.252–.941	[.653, .752]	4,670	27	269.56*	90.36	10,994	
Other	.662	.256–.881	[.574, .735]	3,586	14	204.82*	93.65	6,395	
Gender									14.58**
Primarily male (at least 75% of males)	.608	.256–.827	[.448, .729]	1,211	6	60.63*	91.75	731	
Primarily female (at least 75% of females)	.692	.252–.878	[.594, .769]	2,744	15	256.61*	94.54	7,205	
Occupations									18.27**
With high likelihood of secondary exposure only	.719	.252–.941	[.652, .775]	3,526	22	271.20*	92.26	2,787	
With high likelihood of both primary exposure and secondary exposure	.662	.256–.827	[.601, .715]	4,730	19	198.42*	90.93	2,496	

Note. CI = confidence interval; STS = secondary traumatic stress; ProQOL = Professional Quality of Life Scale; PTD = posttraumatic stress disorder; MBI = Maslach Burnout Inventory.
[a] Weighted effect size. [b] Range of effect sizes. [c] Critical intervals for the weighted effect size. [d] Number of studies. [e] A significant *Q* value indicates that the data are heterogeneous, suggesting that the variability among studies was not due to sampling error. [f] Value indicates the percentage of variance due to heterogeneity among studies. [g] Value indicates the number of studies with null results that are necessary to overturn the results of meta-analysis and to conclude that the results are due to sampling bias. [h] Test for moderating effect.
* $p < .01$. ** $p < .001$.

associations (r^2 = .55) than any other measures of burnout (r^2 range: .28–.53; see Table 2).

Next, we investigated the relationship between STS and three components of job burnout measured with MBI: emotional exhaustion, depersonalization/cynicism, and lack of professional/personal accomplishments (Maslach et al., 2001). Results indicated that the effect size of the relationship between STS and a lack of accomplishment was relatively smaller than the other two effect sizes. In particular, the correlation of STS with emotional exhaustion (weighted r = .55, r^2 = .30, N = 2,361, k = 12) was stronger than the associations with depersonalization, r = .51, r^2 = .26, N = 1,939, k = 9, $t(4298)$ = 11.29, $p < .001$, or lack of accomplishment, weighted r = .35, r^2 = 12, N = 2,158, k = 10, $t(4427)$ = 41.13, $p < .001$.

The theoretical framework as the moderator. We tested whether the associations between STS and job burnout differed depending on the use of the compassion fatigue framework (Figley & Stamm, 1996; Stamm, 2010). In particular, associations ob-

tained in studies in which both STS and job burnout were operationalized in line with the compassion fatigue framework (with ProQOL or ProQOL-related measures applied) were compared to the associations found in studies in which STS and job burnout were operationalized in line with other approaches (see Table 2). These other approaches defined STS as PTSD-like symptoms or vicarious trauma. They defined burnout, focusing on the exhaustion component, as the consequence of work related-stress (cf. Maslach et al., 2001). The results of the moderator analysis indicated that the relationship between STS and job burnout was moderated by the type of theoretical framework (see Table 2). For STS, job burnout associations were significantly stronger when both constructs were assessed with the ProQOL or ProQOL-related measures (r^2 = .55) compared to the associations observed in studies applying measures derived from other approaches (r^2 = 34).

Culture and gender as moderators. The next set of analyses compared: (a) the results obtained in the United States with results found in other countries, and (b) the associations found in studies using English versions of STS and job burnout instruments with the associations found in research using different language versions. Other than the United States, with 19 studies, fewer than 10% of studies were conducted in one country (e.g., four studies in Israel). Therefore, other between-country comparisons were not conducted. The results showed that cultural and language factors moderated the relationship between STS and job burnout (see Table 2). The associations observed for data collected in the United States were significantly stronger (r^2 = .52) compared to the relationships found in the studies from other countries (r^2 = .45). Similarly, significant differences were found when the associations observed in North America were compared to results obtained on other continents (r^2 = .49 and r^2 = .48, respectively; see Table 2). Furthermore, the associations found for the English-language versions of measures were significantly stronger (r^2 = .50) than the relationships obtained in the studies using other language versions (r^2 = .44). Finally, the results indicated that gender might moderate the relationship between STS and job burnout, with stronger associations observed in predominantly female samples (r^2 = .48) compared to predominantly male samples (r^2 = .37; see Table 2).

Type of occupation in the context of work-related exposure to trauma. Results obtained in original studies involving occupations with an increased likelihood for both direct and indirect exposure were compared to those in which only indirect exposure was likely to occur. The analysis indicated that type of occupation moderated the relationship between STS and job burnout (see Table 2). The associations were stronger in samples with occupations with only secondary exposure (r^2 = .52) compared to samples with occupations characterized by high likelihood for both primary and secondary exposure (r^2 = .44).

Discussion

Our meta-analysis investigated the relationship between STS and job burnout among employees indirectly exposed to trauma. The indirect exposure could be due to contact with clients or patients who have experienced traumatic events or due to an exposure to other traumatic materials. High levels of burnout and other consequences of indirect exposure to trauma are likely to be elevated among mental health care providers (Newell & MacNeil, 2011) and to affect professionals' well-being, quality of life of their patients, and the effectiveness of caring (Cheung & Chow, 2011). The present study adds to existing literature by indicating the coexistence of STS and job burnout among professionals exposed indirectly to trauma in their work. The meta-analysis of 41 studies suggests that the association between these two constructs is high, and that these two concepts may share as much as 48% of the variance.

Recently developed frameworks, providing an overview of risk factors for developing negative consequences of working with traumatized patients or clients (Voss Horrell et al., 2011), have assumed that compassion fatigue, burnout, vicarious trauma, and STS constitute a rather homogenous group of psychosocial consequences of secondary exposure. Voss Horrell et al. (2011) suggested that developing this relatively homogenous group of consequences depends on shared risk factors. In other words, it may be assumed that the same risk factors referring to patient, professional, or organizational characteristics would increase the probability of developing compassion fatigue, as well as burnout, vicarious trauma, and PTSD-like symptoms. Strong associations found in our meta-analysis might result from these common risk factors. Further, the effects of indirect exposure to trauma may also be mitigated by cultural and individual resilience factors, such as hardiness or self-efficacy (cf. Luszczynska, Benight, & Cieslak, 2009). Future studies need to investigate the common and specific risk and resilience factors, explaining development of compassion fatigue, burnout, and secondary PTSD.

Research applying constructs and measurement derived from a single theoretical framework is often considered as "the state-of-the-art" approach. By contrast, "covering the bases" by means of amalgamation of several theoretical frameworks is usually assumed as an inferior approach, forcing new relationships on variables from otherwise independent models and creating some redundancy (Figueroa, Kincaid, Rani, & Lewis, 2002). Thus, applying measurement from the same approach, such as compassion fatigue (R. E. Adams et al., 2006; Figley & Stamm, 1996), could be considered as a superior approach to testing the STS–burnout relationship, compared to combining assessment methods from distinct frameworks.

The results of the present study suggest, however, that the application of the compassion fatigue approach to measuring consequences of secondary exposure among professionals has some undesirable consequences. The results of respective moderator analysis indicate that if both STS and job burnout are measured within the compassion fatigue approach (i.e., by means of the ProQOL and related measures), the proportion of shared variance is significantly larger than if the measures are derived from any of the other approaches. If both STS and burnout measures were derived from the compassion fatigue framework, the estimated overlap is 55%, which suggests that STS and burnout constructs might be indistinguishable. The present study does not offer a review of all aspects of STS and burnout theories. Instead, it focused on the operationalization of the key constructs in the STS and burnout frameworks. Therefore, the conclusions are limited to operationalization of the constructs, not entire theories.

Results of our meta-analysis provide arguments for a limited practical utility of applying the ProQOL and ProQOL-related measures when testing for STS and job burnout in one study. Research striving for short measures capturing broader consequences, encompassing symptoms of both STS and burnout, may

want to use one of the subscales of the ProQOL (or ProQOL-related questionnaires), which enables capturing a majority of variance for both constructs.

The results indicate that applying frameworks and measurements different from compassion fatigue (i.e., PTSD-like symptoms, vicarious trauma, or job burnout defined as the focusing on emotional exhaustion consequences of work related-stress) would result in STS and job burnout sharing 34% of variance. In this case, burnout and STS would be related, but measured as sufficiently distinct constructs. This conclusion is in line with earlier research and narrative reviews of literature (Jenkins & Baird, 2002; Sabo, 2011; Thomas & Wilson, 2004).

The results also indicate that a significantly larger overlap between STS and job burnout may be expected if the data are collected in the United States (compared to other countries) and by means of English-language versions of questionnaires (compared to other-language versions). The differences may result from the fact that the translation processes allows for capturing more distinct facets of STS and job burnout. Thus, the translation from English to Hebrew, Dutch, or German may allow for developing refined versions of original methods. Further research needs to investigate the similarities across the language versions in terms of criterion validity and factorial structure. The other source of the between-country differences may result from cultural differences in shaping emotional experiences and emotional processing (Bracken, 2001; Marshall & Suh, 2003) or differences in organizational characteristics, health inequalities, or policies specifying work conditions. Regardless of possible sources of the observed differences, our findings are in line with the assumption that culture is among the key contexts differentiating the effects of secondary exposure among professionals across countries (Marshall & Suh, 2003).

Gender differences in associations between STS and job burnout are in line with previous systematic reviews, suggesting different mechanisms of developing consequences of traumatic stress among men and women (Olff, Langeland, Draijer, & Gersons, 2007). They are also consistent with research that has suggested gender differences in experiencing the depletion of emotional reserves (Watts & Robertson, 2011) or compassion fatigue (Sprang et al., 2007). Further studies should investigate the mechanisms explaining gender inequalities in the likelihood of developing both STS and job burnout among professionals working with trauma survivors.

The results indicating weaker associations between STS and burnout among professionals who are likely to be directly and indirectly exposed to trauma at work, compared to occupations that are likely to involve only indirect exposure, are in line with arguments presented by Palm et al. (2004). Workers exposed to direct trauma at work may be resilient due to better preparedness and training (Palm et al., 2004). Therefore, even if they suffer from one type of consequences of work stress (i.e., burnout), they may not present STS symptoms.

Our research has its limitations. The level of secondary exposure to trauma was not accounted for in our analysis, because several original studies did not assess the exposure. Thus, our results are based on assumptions that the professionals were likely to experience the secondary exposure to trauma, due to the work character and the description of job tasks provided in original studies. Other confounding variables, such as personal history of trauma exposure and other patient characteristics, were also not controlled. Unfortunately, this was not possible, due to the fact that a majority of original research did not account for these factors. Our analyses did not compare service providers who are exposed to trauma indirectly against other human service providers whose level of burnout may result from the strain of caretaking for clients who are not traumatized. Many studies were conducted only once or twice in one country, therefore, a more thorough examination of differences between countries or across language versions was not conducted. Cultural context was defined in a narrow way and referred only to the country of the study and language used in collecting data. It should also be noted that the results should not be generalized to other definitions or frameworks discussing the consequences of secondary work-related exposure to trauma beyond the ones chosen for this review. Finally, the majority of the studies included in the meta-analysis were cross-sectional, therefore no causal associations between STS and job burnout could be investigated.

Conclusion

Our study provides the first quantitative synthesis of research on the relationships between job burnout and STS among professionals working with traumatized clients. This review shows the moderating effects of theoretical frameworks, type of measures, language, country where data were collected, gender, and type of occupation related to trauma exposure. In general, burnout and STS or compassion fatigue are likely to co-occur among professionals exposed indirectly to trauma through their work. Applications of measures developed within the compassion fatigue framework may result in obtaining stronger relationships between job burnout and STS compared to the use of measures derived from different theoretical frameworks (e.g., the approach to STS focusing on PTSD-like symptoms and the burnout framework focusing on exhaustion component). In particular, STS and burnout constructs may be empirically indistinguishable if measured within the compassion fatigue framework.

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Appendix IV: Paper: Cultivating secondary traumatic growth among healthcare workers: The role of social support and self-efficacy.

Cultivating Secondary Traumatic Growth Among Healthcare Workers: The Role of Social Support and Self-Efficacy

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Objective: This 2-study longitudinal investigation examined the indirect effects of secondary traumatic stress (STS) on secondary traumatic growth via two mediators: perceived social support and secondary trauma self-efficacy. In particular, we tested if the 2 hypothetical mediators operate sequentially, that is, with secondary trauma self-efficacy facilitating social support (i.e., cultivation hypothesis) and/or social support enhancing self-efficacy (i.e., enabling hypothesis). **Method:** Participants in Study 1 ($N = 293$ at Time 1, $N = 115$ at Time 2) were behavioral healthcare providers working with U.S. military personnel suffering from trauma. Study 2 was conducted among Polish healthcare workers ($N = 298$ at Time 1, $N = 189$ at Time 2) providing services for civilian survivors of traumatic events. **Results:** In both studies, multiple mediational analyses showed evidence for the cultivation hypothesis. The relationship between STS at Time 1 and secondary traumatic growth at Time 2 was mediated sequentially by secondary trauma self-efficacy at Time 1 and social support at Time 2. The enabling hypothesis was not supported. **Conclusion:** Education and development programs for healthcare workers may benefit from boosting self-efficacy with the intent to facilitate perceived social support.
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Keywords: secondary traumatic stress; secondary traumatic growth; social cognitive theory; perceived social support; self-efficacy; mediation

Negative outcomes after *direct* exposure to traumatic events have been linked to psychological disorders including posttraumatic stress disorder (PTSD), represented by such symptoms as reexperiencing, avoidance, and hyperarousal (Brewin, Andrews, & Valentine, 2000). Secondary traumatic stress (STS), in comparison, is defined by the same set of symptoms resulting from *indirect* exposure to trauma (Bride, Robinson, Yegidis, & Figley, 2004). This indirect exposure is typified by healthcare providers working with traumatized individuals. The indirect exposure has been associated with many negative consequences including higher distress and increased negative cognitions (Pearlman & Mac Ian, 1995), higher job burnout (Ballenger-Browning et al., 2011), and lower job satisfaction (Devilly, Wright, & Varker, 2009).

In addition to the negative consequences of direct and indirect exposure to trauma, recent research has highlighted the importance of positive changes after exposure to trauma, such as meaning-making processes (Park & Ai, 2006) and posttraumatic growth (Cann et al., 2010). Building on the posttraumatic growth construct, Arnold and colleagues (2005) coined the term *vicarious posttraumatic growth*, referring to positive changes in schemas about self and the world

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and perceived psychological growth. Trauma-focused providers may experience this type of growth as a result of their work. Although we agreed with Arnold et al.'s conceptualization of vicarious posttraumatic growth, we have chosen to utilize the term *secondary traumatic growth* as it denotes more clearly the growth resulting from indirect exposure to trauma.

There is limited evidence for the relationships between STS and psychological growth variables among human services workers indirectly exposed to trauma. Positive associations between STS and secondary posttraumatic growth were found in studies enrolling mental health therapists (Brockhouse, Msetfi, Cohen, & Joseph, 2001) and disaster workers (Linley & Joseph, 2006). However, there are two primary limitations of these findings. First, the Brockhouse et al. (2001) study was cross-sectional. And, second, neither study utilized a theory-driven model to elucidate the underlying mechanisms related to posttraumatic growth. In this article, we reported on two studies that were longitudinal and based on social cognitive theory (Bandura, 1997).

Social Cognitive Theory as a Theoretical Framework

Social cognitive theory (SCT; Bandura, 1997) highlights bidirectional interactions between three sets of variables: the environment, individual factors, and behavior. Called triadic reciprocal determinism, this framework emphasizes self-regulation as a key mechanism for human adaptation. The triadic system functions through feedback processes operating internally (e.g., self-evaluations) and externally (changes in environmental conditions) and aims at recalibrating efforts toward desired outcomes (e.g., reduction of negative states). Self-efficacy is a critical appraisal factor that is central to the self-evaluative process. Social support operates as a primary environmental resource. We argue that social support and self-efficacy serve as key mediators in the association between STS and secondary traumatic growth.

Self-efficacy. Self-efficacy, in the context of traumatic stress, refers to perceived ability to manage environmental demands and personal functioning after adverse or traumatic experiences (Benight & Bandura, 2004). Through positive construal of challenging environmental demands, individuals are able to manage these demands in a more effective manner. Self-efficacy is related to lower levels of secondary traumatic distress in trauma counselors (Ortlepp & Friedman, 2002). Further, there is empirical evidence suggesting self-efficacy may play an important meditational role in the relationship between trauma exposure and psychological distress in disaster survivors (Benight, Ironson et al., 1999) and between stress appraisal and compassion satisfaction in rescue workers (Prati, Pietrantoni, & Cicognani, 2011).

We identified no studies examining the mediation effect of self-efficacy on the relationship between STS and secondary traumatic growth. However, based on well-documented mediating functions of self-efficacy in the context of direct traumatization (Cieslak, Benight, & Lehman, 2008), it may be assumed that self-efficacy would play a mediating role in the relationship between STS and secondary traumatic growth. In our studies, we hypothesized that self-efficacy would mediate the relationship between STS and secondary traumatic growth, with higher STS relating to lower self-efficacy and lower self-efficacy leading to lower secondary traumatic growth (Hypothesis 1).

Social support. Social support is a concept that refers to actual aiding resources provided by others (i.e., received social support) or to the perception of availability of aiding resources (i.e., perceived social support; Lin, 1986). Higher social support leads to lower negative consequences of direct traumatization (e.g., lower PTSD; Griffith, 2012) and higher positive changes after a traumatic event such as posttraumatic growth (Cieslak et al., 2009; Luszczynska, Sarkar, & Knoll, 2007). Similarly to self-efficacy, social support may be considered a mediator in the relationship between STS and secondary traumatic growth. Although we identified no research on the mediating role of social support in this relationship, there is evidence showing that social support mediates the relationship between posttraumatic distress symptoms and posttraumatic growth (Hogan & Schmidt, 2002). Therefore, we hypothesized that perceived social support would mediate the effect of STS on secondary traumatic growth. Specifically, higher secondary

traumatic stress would lead to lower perceived social support, and lower perceived social support would predict lower secondary traumatic growth (Hypothesis 2).

Cultivation and enabling hypotheses. Self-efficacy and social support have been defined in this investigation as mediators. Schwarzer and Knoll (2007), however, argued that the relationship between support and self-efficacy may be bidirectional. There are two alternative hypotheses explaining the relationship between self-efficacy and social support. The cultivation hypothesis suggests that self-efficacy facilitates social support, whereas the enabling hypothesis states that social support enhances and protects self-efficacy (Schwarzer & Knoll, 2007). Previous studies supporting the cultivation hypothesis showed that self-efficacy reduced depressive symptoms through the mediating effect of received social support (Schwarzer & Gutiérrez-Doña, 2005; Schwarzer & Knoll, 2007). In studies testing the enabling hypothesis, self-efficacy mediated the effect of perceived social support on distress (Benight, Swift et al., 1999) and quality of life (Amir, Roziner, Knoll, & Neufeld, 1999) and the effect of received social support on posttraumatic growth (Cieslak et al., 2009; Luszczynska et al., 2007).

Although both the cultivation and enabling hypotheses have been supported by empirical findings, no studies have examined these hypotheses in the context of indirect exposure to trauma. We hypothesized that the effect of STS on secondary traumatic growth would be mediated first by secondary trauma self-efficacy and then by perceived social support (Hypothesis 3, cultivating effect), and/or mediated first by perceived social support and then by self-efficacy (Hypothesis 4, enabling effect). All four hypotheses were tested in two longitudinal studies. Study 1 enrolled behavioral healthcare providers working with military patients suffering from trauma. Civilian healthcare providers offering services for trauma survivors took part in Study 2.

Study 1

Method

Participants. The study was a part of the SupportNet project, investigating predictors of secondary traumatic stress and job burnout among behavioral and mental healthcare providers working with the U.S. military personnel suffering from trauma. Inclusion criteria were a follows: (a) working for at least one year as a clinical psychologist, counselor, social worker, physician or nurse; (b) providing services for a military population; and (c) being indirectly exposed to trauma through interaction with patients. Of 310 respondents who completed the online survey at Time 1 (T1), 293 participants (98 males, 33.4%) were qualified for the present study based on the inclusion criteria. Of those who completed the T1 assessment, 115 participants (33 males, 28.7%) took part in Time 2 (T2) measurement 6 months later.

Table 1 displays the demographic characteristics. Participants experienced indirect exposure to different types of traumatic events through interaction with clients, including, for example, sudden unexpected death of someone close (89.4%), life-threatening illness or injury (88.1%), military combat (86.7%), sexual assault (84.3%), physical assault (82.6%), transportation accidents (80.9%), and natural disasters (66.6%). Additionally, all participants were directly exposed to trauma, with the average number of 3.23 (standard deviation [*SD*] = 1.90) traumatic events reported per person in a lifetime.

Measures. Participants completed a set of questionnaires evaluating STS, perceived social support, secondary trauma self-efficacy, and secondary traumatic growth. Indirect exposure to trauma and demographic variables were assessed as possible factors that should be controlled when testing the hypotheses.

Secondary traumatic stress. Secondary Traumatic Stress Scale (Bride et al., 2004) is a 17-item questionnaire used to measure the frequency of STS symptoms in the past month. It comprises the Intrusion subscale (five items), the Avoidance subscale (seven items), and the Arousal subscale (five items). The present study only used a total score of all items. Using a 5-point response scale, ranging from 1 (*never*) to 5 (*very often*), participants evaluated frequency

Table 1
Descriptive and Demographic Statistics for Study 1 and Study 2

Measure	Study 1 T1	Study 1 T2	Study 2 T1	Study 2 T2
Mean age (*SD*)	48.91 (12.83)	50.27 (12.59)	35.37 (8.48)	35.08 (8.12)
Gender				
Female	195 (66.6%)	82 (71.3%)	226 (75.8%)	150 (80.6%)
Male	98 (33.4%)	33 (28.7%)	69 (23.2%)	36 (19.0%)
Intimate relationship				
In a long-term relationship	224 (76.5%)	81 (70.4%)	219 (73.5%)	146 (77.2%)
Not in a long-term relationship	62 (21.2%)	31 (27.0%)	77 (25.8%)	42 (22.2%)
Highest degree				
High school	1 (0.3%)	0 (0%)	62 (20.8%)	35 (18.5%)
Associate's degree	1 (0.4%)	0 (0%)	-	-
Bachelor's degree	6 (2.0%)	2 (1.7%)	65 (21.8%)	37 (19.6%)
Master's degree	130 (44.4%)	55 (47.8%)	166 (55.7%)	114 (60.3%)
Doctorate degree	155 (52.9%)	58 (50.4%)	3 (1.0%)	1 (0.5%)
Profession				
	115 CP (39.2%)	41 CP (35.7%)	143 HCP (48.0%)	86 HCP (45.5%)
	77 counselors (26.3%)	27 counselors (23.5%)	113 SW (37.9%)	77 SW (40.7%)
	56 SW (19.1%)	21 SW (18.3%)	37 others (12.4%)	23 others (12.2%)
	35 HCP (11.9%)	7 HCP (6.1%)		

Note. T1 = Time 1, T2 = Time 2; SD = standard deviation; CP = clinical psychologist; HCP = healthcare provider; SW = social worker. Sample size for Study 1: $N_{T1} = 293$, $N_{T2} = 115$. Sample size for Study 2: $N_{T1} = 298$, $N_{T2} = 189$. Some percentages did not add up to 100% because of missing data. Long-term relationship included married couples and couples in a committed relationship.

of each symptom in relation to their work with patients who had been exposed to traumatic events. Sample items are "I felt emotionally numb" and "I felt jumpy." Cronbach's alpha was .94 for both T1 and T2 assessments.

Secondary trauma self-efficacy. Because there is evidence that the domain-specific measures of self-efficacy are more useful in predicting adaptation than are the general ones (Luszczynska, Scholz, & Schwarzer, 2005), we employed self-efficacy specific to STS. Secondary trauma self-efficacy is defined as the perceived ability to cope with the challenging demands resulting from work with traumatized clients and the perceived ability to deal with the secondary traumatic stress symptoms. Secondary Trauma Self-Efficacy Scale (Cieslak et al., 2013) is a 7-item questionnaire based on other self-efficacy instruments that were designed to measure perceived ability to cope with demands resulting from direct exposure to trauma and perceived ability to deal with posttraumatic stress symptoms (e.g., Lambert, Benight, Harrison, & Cieslak, 2012). Secondary trauma self-efficacy scale measures self-efficacy in the context of an *indirect* exposure to trauma. Participants rate the degree of perceived capability on a 7-point scale, ranging from 1 (*very incapable*) to 7 (*very capable*). The stem "How capable am I to . . . " is followed by such items as "deal with the impact these people have had on my life." Cronbach's alphas were .87 (T1) and .91 (T2).

Perceived social support. Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item questionnaire measuring availability of social support from family (four items), friends (four items), and broadly defined significant others (four items). A total score of all items was used in further analyses. The instruction was modified to measure perceived social support in the context of work-related demands in the past month. Participants rated the degree of agreement for each item on a 7-point scale, ranging from 1 (*very*

strongly disagree) to 7 (*very strongly agree*). Sample items are "I can talk about my problems with my friends" and "My family really tries to help me." Cronbach's alpha was .94 for both T1 and T2.

Secondary traumatic growth. Posttraumatic Growth Inventory-Short Form (PTGI-SF; Cann et al., 2010) was used to assess positive changes resulting from indirect exposure to trauma. The original PTGI-SF is a 10-item self-rated questionnaire that measures experience of significant positive change after a trauma. We modified the instruction by asking participants to rate the degree of change as a result of their *indirect* exposure to trauma through work with clients. A 6-point response scale ranged from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very great degree*). Sample items are "I have a stronger religious faith" and "I established a new path for my life." Cronbach's alphas were .93 (T1) and .92 (T2).

Indirect exposure to trauma. Secondary Trauma Exposure Scale (Cieslak et al., 2013) was used to measure indirect exposure to traumatic events. It comprises a list of 10 potentially traumatic events (e.g., natural disasters, sexual assaults, military combat). Participants responded whether they were exposed to each event through their work with traumatized clients. Then they rated how frequently they worked with patients who experienced at least one of the potentially traumatic events on the list, using a 7-point scale, ranging from 1 (*never*) to 7 (*every day*).

Demographics. Demographic questions included age, gender, a relationship status, profession, and highest academic degree.

Procedure. The study was approved by the institutional review board (IRB) at the authors' institution. Providers who were located in the civilian community received the email with a link to the online survey through an online newsletter sent by TriWest Healthcare Alliance, an organization managing health benefits for military patients and their families. Providers located on military installations received the link to the survey in an email from the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, Colorado, and from the Psychology Consultant to the U.S. Army Surgeon General at San Antonio, Texas. Respondents filled out the survey voluntarily, anonymously, and with no compensation for their time. Approximately 6 months later (mean [*M*] = 191.90 days, *SD* = 14.18), participants who agreed to take part in the T2 assessment received an email invitation to the online survey containing the same set of the questionnaires as in T1.

Analytical procedures. To test whether the data supported the cultivation hypothesis and/or enabling hypothesis, we performed multiple mediation analyses using PROCESS (Hayes, 2012). PROCESS permits for conducting multiple mediator regression analysis, accounting for covariates. Further, PROCESS allows for testing hypotheses assuming that mediators are chained together in a specific sequence (e.g., secondary traumatic stress [the independent variable] predicting social support [the first mediator], which in turn predicts self-efficacy [the second mediator], which predicts secondary traumatic growth [the dependent variable]).

Results of analyses are presented using three types of coefficients. A regression coefficient for each parameter is provided (see Figures 1 and 2). Further, PROCESS estimates the indirect effect coefficient (*B*) for each indirect pathway between the independent variable (STS at T1) and the dependent variable (secondary traumatic growth at T2), accounting for respective mediators and covariates. Bootstrapping method was used to test inferences about the significance of mediation effects (*B* coefficients). The bootstrap approach is considered superior to normal theory-based Sobel's test for the significance of the mediation (Hayes, 2012). Finally, we calculated partially standardized indirect effect size coefficients, ab_{ps} (Preacher & Kelley, 2011), for each indirect pathway.

To test the cultivation and enabling hypotheses as well as the hypotheses assuming simple mediating effects of self-efficacy and social support, we estimated *B* coefficients and confidence

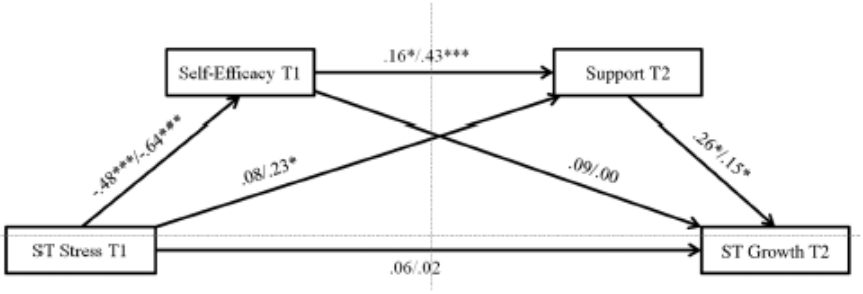

Figure 1. Model 1, referring to the cultivation hypothesis, being tested with the multiple mediation analysis. *Note*. A value before the slash is standardized regression coefficient (i.e., β) for Study 1, and value after the slash is β for Study 2. T1 = Time 1; T2 = Time 2; ST Stress = secondary traumatic stress; ST Growth = secondary traumatic growth. Additionally, the following effects were controlled in the analyses: (a) the effects of T1 indirect exposure on T1 secondary trauma self-efficacy (β = −.10, p = .19 for Study 1 and β = .06, p = .27 for Study 2), T2 social support (β = .05, p = .42 for Study 1 and β = −.05, p = .45 for Study 2), and T2 secondary traumatic growth (β = −.11, p = .18 for Study 1 and β = −.06, p = .32 for Study 2); (b) the effects of T1 social support on T1 self-efficacy (β = .18, p = .03 for Study 1 and β = .15, p = .01 for Study 2), T2 social support (β = .77, p < .001 for Study 1 and β = .29, p < .001 for Study 2), and T2 secondary traumatic growth (β = −.11, p = .41 for Study 1 and β = .01, p = .83 for Study 2); (c) the effects of T1 secondary traumatic growth on T1 self-efficacy (β = .28, p < .001 for Study 1 and β = .13, p = .02 for Study 2), T2 social support (β = −.05, p = .44 for Study 1 and β = −.07, p = .28 for Study 2), and T2 secondary traumatic growth (β = .51, p < .001 for Study 1 and β = .58, p < .001 for Study 2). Values displayed only for completers.
***$p < .001$. **$p < .01$. *$p < .05$.

intervals for *B*s using PROCESS. To obtain *B* for a specific indirect pathway, all variables, including the independent, mediators, dependent, and covariate variables, were entered into one equation. For the cultivation hypothesis (Model 1), secondary trauma self-efficacy (T1) and perceived social support (T2) were entered into the equation in a serial order to test if secondary trauma self-efficacy (T1) has a delayed effect on perceived social support (T2; see Figure 1). Indirect exposure to trauma (T1), perceived social support (T1), and secondary traumatic growth (T1) were entered into the equation as covariates. The enabling hypothesis model (Model 2) used the same set of assumptions and variables, except the sequential order of mediator variables was altered: perceived social support (T1) was assumed to predict secondary trauma self-efficacy (T2; see Figure 2). For the enabling hypothesis, indirect exposure to trauma (T1), secondary trauma self-efficacy (T1), and secondary traumatic growth (T1) were controlled for in the equation.

Missing data for all variables were replaced using the multiple imputation method (Schafer & Graham, 2002; Streiner, 2002). In the first step, data missing for those who completed both T1 and T2 was imputed. Secondary traumatic growth (T1 and T2), STS (T1 and T2), self-efficacy (T1 and T2), social support (T1 and T2) and secondary trauma exposure frequency (T1) were included in the regression method for multiple imputation. In total, 0.48% of the values at T1 and 0.23% of the values at T2 were replaced. In the second step, data missing for dropouts (55.46% of the T2 values) were imputed. Data obtained at T1, including exposure, support, efficacy, growth, STS, and sociodemographic variables as well as completer/dropout status were missing completely at random (MCAR), Little's $\chi^2(16) = 11.74$, $p = .76$. Analyses for T2 also confirmed MCAR pattern of missing data, Little's $\chi^2(6) = 4.25$, $p = .64$.

The analyses were conducted initially for completers. Next, we repeated the estimation of *B* coefficients, their confidence intervals, and effect sizes using data from completers and imputed data of those who dropped out at T2 (i.e., completers and dropouts).

Results

Preliminary analyses. Table 2 displays means, standard deviations, and Pearson's correlations of all variables measured at T1 and T2. Attrition analysis showed no significant differences

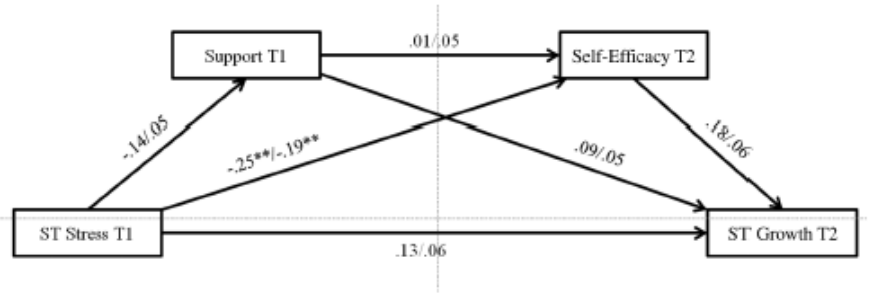

Figure 2. Model 2, referring to the enabling hypothesis, being tested with the multiple mediation analysis. *Note.* A value before the slash is standardized regression coefficient (i.e., β) for Study 1, and value after the slash is β for Study 2. T1 = Time 1; T2 = Time 2; ST Stress = secondary traumatic stress; ST Growth = secondary traumatic growth. Additionally, the following effects were controlled in the analyses: (a) the effects of T1 indirect exposure on T1 social support (β = .03, p = .72 for Study 1 and β = −.11, p = .14 for Study 2), T2 self-efficacy (β = .01, p = .92 for Study 1 and β = −.06, p = .31 for Study 2), and T2 secondary traumatic growth (β = −.10, p = .23 for Study 1 and β = −.07, p = .30 for Study 2); (b) the effects of T1 secondary trauma self-efficacy on T1 social support (β = .25, p = .03 for Study 1 and β = .27, p = .01 for Study 2), T2 self-efficacy (β = .48, p < .001 for Study 1 and β = .51, p < .001 for Study 2), and T2 secondary traumatic growth (β = .04, p = .69 for Study 1 and β = .04, p = .71 for Study 2); (c) the effects of T1 secondary traumatic growth on T1 social support (β = .09, p = .33 for Study 1 and β = .08, p = .29 for Study 2), T2 self-efficacy (β = .03, p = .68 for Study 1 and β = .01, p = .82 for Study 2), and T2 secondary traumatic growth (β = .50, p < .001 for Study 1 and β = .57, p < .001 for Study 2). Values displayed only for completers.
***$p < .001$. **$p < .01$. *$p < .05$.

between completers and dropouts in terms of STS at T1, $t(291) = 0.17$, $p = .87$; secondary trauma self-efficacy at T1, $t(291) = 0.29$, $p = .77$; perceived social support at T1, $t(291) = 0.08$, $p = .94$; secondary traumatic growth at T1, $t(291) = 1.25$, $p = .21$; indirect exposure to trauma, $t(291) = 0.65$, $p = .52$; age, $t(287) = 1.61$, $p = .11$; gender, $\chi^2(1) = 2.38$, $p = .12$; relationship status, $\chi^2(1) = 2.82$, $p = .09$; profession, $\chi^2(3) = 5.79$, $p = .12$; and education, $\chi^2(4) = 2.48$, $p = .65$.

Multiple mediation analyses. To test the four hypotheses, two multiple mediation models were analyzed. Model 1 was designed to verify Hypothesis 1 (with self-efficacy at T1 as a mediator), Hypothesis 2 (with social support at T2 as a mediator), and Hypothesis 3 (i.e., cultivation process). In Model 2, Hypotheses 1 and 2 were tested again (but with mediators measured at T2 and T1, respectively), and Hypothesis 4 (i.e., enabling process) was evaluated.

Model 1

First, data obtained from completers were analyzed. The multiple mediation analysis for Model 1 showed that Pathway 1, testing the simple mediation effect of secondary trauma self-efficacy at T1 (Hypothesis 1) and Pathway 2 testing the simple mediation role of perceived social support at T2 (Hypothesis 2), were not significant (Table 3).

Second, analyses conducted with dropout values imputed showed that Pathway 1 was significant (Table 3). In particular, higher STS (T1) was related to lower secondary trauma self-efficacy (T1), β = −.60, $p = .001$, and lower self-efficacy (T1) predicted lower secondary traumatic growth (T2), β = .11, $p = .04$. Furthermore, Pathway 2 was significant (Table 3). Higher STS (T1) explained higher perceived social support (T2), β = .07, $p = .06$, which in turn was associated with lower secondary traumatic growth (T2), β = .32, $p = .001$.

Testing for the cultivation hypothesis. When the completers' data were analyzed, Pathway 3 of Model 1 was significant, indicating that the cultivation hypothesis was supported (Table 3). Figure 1 shows standardized regression coefficients for each path in Model. After

Table 2
Means, Standard Deviations, Pearson's Correlations Among Study Variables for Study 1 and Study 2

Variable	1	2	3	4	5	6	7	8	9	Mean (*SD*) Study 1	Mean (*SD*) Study 2	*t*
1. Indirect exposure	–	.12*	.14	−.03	−.06	−.02	−.08	.10	.01	6.18 (1.03)	4.65 (1.72)	13.09***
2. STS T1	−.03	–	.79***	−.16**	−.10	−.65***	−.54***	−.06	−.05	1.88 (0.66)	2.32 (0.65)	9.21***
3. STS T2	.02	.76***	–	−.15*	−.20**	−.60***	−.61***	−.03	.01	1.78 (0.65)	2.28 (0.67)	6.38***
4. Social support T1	.11	−.34**	−.23*	–	.36***	.25***	.22**	.12*	.14	5.77 (1.07)	5.00 (1.50)	7.17***
5. Social support T2	.08	−.20*	−.27**	.80***	–	.34***	.36***	.02	.17*	5.68 (1.16)	5.02 (1.30)	4.47***
6. ST self-efficacy T1	.03	−.55***	−.45***	.33***	.37***	–	.65***	.15*	.16*	6.09 (0.77)	5.19 (0.94)	12.72***
7. ST self-efficacy T2	.05	−.49***	−.57***	.25**	.35***	.62***	–	.13	.14	6.18 (0.84)	5.23 (0.90)	9.15***
8. ST Growth T1	.11	.10	.18	.13*	.11	.13*	.13	–	.58***	2.35 (1.28)	2.97 (1.07)	6.39***
9. ST Growth T2	−.06	.06	.00	.19*	.25**	.25**	.23*	.55***	–	2.25 (1.29)	3.01 (0.98)	5.80***

Note. T1 = Time 1; T2 = Time 2; Indirect Exposure = indirect exposure to trauma; STS = secondary traumatic stress; ST Self-Efficacy = secondary trauma self-efficacy; ST Growth = secondary traumatic growth. Correlations below the diagonal show values for Study 1 ($N_{T1} = 293, N_{T2} = 115$). Correlations above the diagonal show values for Study 2 ($N_{T1} = 298, N_{T2} = 189$). Data presented for those who participated in Time 1 and Time 2 assessments.
***$p < .001$. **$p < .01$. *$p < .05$.

Table 3
Mediating Effects of Perceived Social Support and Secondary Trauma Self-Efficacy in the Relationship Between Secondary Traumatic Stress and Secondary Traumatic Growth

Indirect effects pathways	*B*	*SE*	BC 95% CI		Effect size
			Lower	Higher	ab_{ps}
Study 1: Model 1					
1. STS T1→ST self-efficacy T1→ST growth T2	−.079/ **−.088**	.095/ .043	−.289/ −.182	.081/ −.013	−.061/ −.088
2. STS T1→Support T2→ST growth T2	.042/ **.033**	.046/ .020	−.022/ .004	.171/ .088	.033/ .033
3. Cultivation hypothesis: STS T1→ST self-efficacy T1→ Support T2→ST growth T2	**−.041/ −.026**	.029/ .014	−.136/ −.064	−.002/ −.006	−.032/ −.026
Study 1: Model 2					
4. STS T1→ST self-efficacy T2→ST growth T2	**−.100/ −.064**	.056/ .026	−.231/ −.124	−.008/ −.018	−.077/ −.063
5. STS T1→Support T1→ST growth T2	−.030/ **−.042**	.045/ .025	−.163/ −.100	.021/ −.003	−.024/ −.042
6. Enabling hypothesis: STS T1→Support T1→ST self-efficacy T2→ST growth T2	−.001/ −.000	.006/ .004	−.022/ −.009	.006/ .007	−.001/ .000
Study 2: Model 1					
7. STS T1→ST self-efficacy T1→ST growth T2	−.001/ −.011	.072/ .049	−.148/ −.093	.134/ .103	−.001/ −.009
8. STS T1→Support T2→ST growth T2	**.048/ .046**	.029/ .023	.008/ .013	.130/ .109	.048./ .053
9. Cultivation hypothesis: STS T1→ST self-efficacy T1→Support T2→ST growth T2	**−.058/ −.053**	.029/ .023	−.137/ −.110	−.015/ −.017	−.058/ −.060
Study 2: Model 2					
10. STS T1→ST self-efficacy T2→ST growth T2	−.016/ −.012	.025/ .017	−.081/ −.054	.023/ .016	−.016/ −.012
11. STS T1→Support T1→ST growth T2	.004/ .000	.012/ .010	−.009/ −.020	.051/ .021	.004/ .000
12. Enabling hypothesis: STS T1→Support T1→SE self-efficacy T2→ST growth T2	.000/ .000	.001/ .001	−.000/ −.001	.006/ .001	.000/ .000

Note. SE = standard error; T1 = Time 1; T2 = Time 2; STS = secondary traumatic stress; ST self-efficacy = secondary trauma self-efficacy; Support = perceived social support; ST growth = secondary traumatic growth. Values before the slash were calculated for completers. Values after the slash were calculated using data from completers and T2 dropouts whose values were imputed. Values of indirect effect coefficient (*B*) presented in bold are significant. Each bootstrap was based on 5,000 repetitions. Bias corrected (BC) confidence intervals (CI) that do not include zero indicate a significant indirect effect.

controlling for the effects of three covariates (i.e., T1 indirect exposure to trauma, T1 social support, and T1 secondary traumatic growth), high secondary traumatic stress (T1) was related to lower secondary trauma self-efficacy (T1), which in turn predicted lower social support (T2), and then lower social support (T2) was related to lower secondary traumatic growth (T2).

Similar results, confirming the cultivation hypothesis, were obtained when imputed data for dropouts were included in the analysis (Table 3). Again, Pathway 3 of Model 1 was significant.

Model 2

When data obtained from the completers were analyzed, the multiple mediation analysis for Model 2 showed that Pathway 4 was significant (Table 3). Higher STS (T1) predicted lower secondary trauma self-efficacy (T2), and lower self-efficacy (T2) was related to lower secondary traumatic growth (T2; see Figure 2). Pathway 5, testing the mediation effect of social support (T1), was not significant (Table 3) when the analyses were conducted just for completers.

In the analysis accounting for data from completers and imputed dropouts, Pathway 4 was significant (Table 3). High STS (T1) predicted low self-efficacy (T2), $\beta = -.21$, $p = .001$, and high self-efficacy (T2) was related to high secondary traumatic growth (T2), $\beta = .20$, $p = .01$. Pathway 5 was also significant (Table 3). Higher STS (T1) was associated with lower social support (T1), $\beta = -.21$, $p = .001$, which in turn predicted lower secondary traumatic growth (T2), $\beta = .11$, $p = .03$.

Testing for the enabling hypothesis. When data obtained from the completers were analyzed, Pathway 6, representing the enabling hypothesis, was not significant (Table 3). Figure 2 shows standardized regression coefficients for each path. The indirect effect testing enabling hypothesis was not significant when dropouts' imputed data were included in the analysis (Table 3). In sum, the enabling hypothesis was not supported.

Discussion

Results of Study 1 provided support for the cultivation hypothesis stating that secondary trauma self-efficacy facilitates perceived social support. These two variables constitute a specific order of chained mediators in the relationship between secondary traumatic stress and secondary traumatic growth. The enabling hypothesis was not supported. Further, analyses conducted for completers and analyses including imputed dropout values yielded similar results: The cultivation hypothesis should be accepted, whereas the enabling hypothesis should be rejected. Inconsistency of the results referring to the mediating function of self-efficacy (Hypothesis 1) and social support (Hypothesis 2) requires further investigation. In general, analyses provide tentative support for simple mediating effects of self-efficacy beliefs. The indirect effects of self-efficacy, obtained in simple mediation analysis, were larger than the indirect effects observed for social support. The findings of Study 1 should be replicated on a different sample to confirm that the findings are not specific for behavioral and mental healthcare providers working with traumatized military populations.

Study 2

To rectify the limitation of Study 1 related to a circumscribed client population, all hypotheses were tested again in a longitudinal study among professionals providing services to traumatized civilian populations. Additionally, these professionals were working within a different cultural context, in Poland. Thus, Study 2 was also designed to provide cross-cultural and clinical population validation of the initial findings.

Method

Participants. Healthcare and social workers providing services for civilian survivors of traumatic events were enrolled in the study. Inclusion criteria were (a) working at least one year

as a social worker or healthcare provider (e.g., physician, nurse, or paramedic); (b) providing services for a civilian population suffering from trauma; and (c) being indirectly exposed to trauma through interaction with clients. A total of 298 respondents (69 males, 23.2%) who met these criteria completed the online survey at T1. See Table 1 for sample demographic information. Participants were indirectly exposed to different types of traumatic events at work, including life-threatening illness or injury (89.3%), physical assault (87.6%), sudden unexpected death of someone close (82.6%), transportation accidents (73.5%), sexual assault (52.7%), and natural disasters (30.2%). Only 9.4% of participants were indirectly exposed to military-related trauma. Additionally, 77.9% of participants reported a lifetime direct exposure to a traumatic event. Of those who completed the T1 assessment, 189 participants (36 males, 19%) took part in the T2 measurement.

Measures. Respondents completed the same set of measures as in Study 1. These included (a) the Secondary Traumatic Stress Scale (αs = .91 for T1 and .93 for T2); (b) the Secondary Trauma Self-Efficacy Scale (αs = .89 for T1 and .88 for T2); (c) the Multidimensional Scale of Perceived Social Support (α = .96 for both T1 and T2); and (d) a modified version of the Posttraumatic Growth Inventory-Short Form (αs = .92 for Time 1 and .91 for Time 2). As in Study 1, only total scores were used for the questionnaires, and the indirect exposure to trauma was measured with one item (frequency of exposure) in the Secondary Trauma Exposure Scale. Instructions for all instruments were modified so that participants were asked to respond to the items in the context of work-related indirect exposure to trauma. The Polish versions of measures were prepared using the back-translation procedure.

Procedure. The study was approved by the IRB at the appropriate institution in Poland. Data were collected with a web-based survey. Participants were recruited through professional and online social networks dedicated to specialists working with traumatized clients. Those who volunteered were informed about the study aims, provided informed consent, and filled out the online questionnaires. If participants agreed to take part in the T2 survey, they received an e-mail invitation. The mean time that elapsed between the T1 and T2 was 162.04 days (SD = 39.72).

Analytical procedures. Missing data were replaced using the multiple imputation method with the same procedures as in Study 1 (Schafer & Graham, 2002; Streiner, 2002). As in Study 1, the data were missing completely at random at T1, Little's $\chi^2(12) = 14.73$, $p = .26$, and at T2, Little's $\chi^2(9) = 13.88$, $p = .13$. For completers-only analyses, 1.17% of the T1 values were replaced and 0.40% of the T2 values were replaced. When data for completers and dropouts were analyzed, 36.3% of the T2 values were replaced. A series of two multiple mediation analyses were performed using the same procedure and software as in Study 1.

Results

Preliminary analyses. Table 2 displays the means, standard deviations, and correlations for the study variables. Attrition analysis showed no significant differences between completers and dropouts at T1 in terms of STS, $t(296) = 0.61$, $p = .54$, secondary trauma self-efficacy, $t(296) = 0.57$, $p = .57$, perceived social support, $t(296) = 0.63$, $p = .53$, secondary traumatic growth, $t(296) = 0.86$, $p = .39$, indirect trauma exposure, $t(296) = 1.88$, $p = .06$, age, $t(269) = 0.76$, $p = .45$, intimate relationship status, $\chi^2(1) = 3.61$, $p = .06$, profession, $\chi^2(2) = 1.77$, $p = .41$, and education, $\chi^2(3) = 5.60$, $p = .13$. However, compared to dropouts, completers were more often women than men, $\chi^2(1) = 4.57$, $p = .03$.

Across the study variables' mean levels obtained by participants in Studies 1 and 2 were compared (see Table 2). In Study 1, respondents reported significantly higher frequency of indirect exposure to trauma, higher levels of social support (T1 and T2) and secondary trauma self-efficacy (T1 and T2), significantly lower secondary traumatic growth (T1 and T2), and lower STS (T1 and T2) compared to professionals enrolled in Study 2.

Multiple mediation analyses. The cultivation and enabling hypotheses as well as simple mediation hypotheses were tested with the same two multiple mediation models as in Study 1.

Model 1

First, data obtained from the completers were analyzed. Pathway 7, testing the simple mediation effect of T1 secondary trauma self-efficacy (Hypothesis 1), was not significant (Table 3). In contrast, the simple meditation effect of perceived social support (T2) was found to be significant in the relationship between STS at T1 and secondary traumatic growth at T2 (Hypothesis 2; see Table 3, Pathway 8). After accounting for the effects of three T1 covariates, STS (T1) predicted increased perceived social support (T2) 2, which in turn was associated with increased levels of secondary traumatic growth (T2; see Figure 1). Next, analyses were repeated with data obtained from completers and dropouts (after applying multiple imputation procedures). A similar pattern of results emerged (Table 3).

Testing for the cultivation hypothesis. When completers' data were analyzed, results of the multiple mediation analysis provided support for Hypothesis 3. Please refer to the confidence intervals for Pathway 9 in Table 3. After partialling out the effects of the three covariates, T1 STS was related to lower self-efficacy (T1), and then lower self-efficacy (T1) contributed to the lower level of social support (T2), which in turn was related to lower levels of secondary traumatic growth (T2; see Figure 2). Similar results, confirming the cultivation hypothesis, were obtained when imputed data for dropouts were included in the analysis (Table 3).

Model 2

Results of the simple mediation analysis (conducted for completers) indicated that neither secondary trauma self-efficacy (T2) nor perceived social support (T1) mediated the relationship between STS at T1 and secondary traumatic growth at T2 (see Table 3, Pathways 10 and 11). Similar results were obtained when imputed dropouts' data were included in the analysis (Table 3). Thus, Hypotheses 1 and 2 were not supported.

Testing for enabling the hypothesis. The analyses conducted for completers showed that Pathway 12, testing the enabling process (Hypothesis 4), was not significant (see Table 3). When imputed data for dropouts were included in the analysis, similar results for Pathway 12 were obtained (Table 3). The enabling hypothesis was not supported.

Discussion

In line with findings obtained in Study 1, results of Study 2 supported the cultivation hypothesis but not the enabling hypothesis. Further, analyses conducted for completers and analyses accounting for dropouts' imputed data yielded consistent results. There was no support for the hypothesis assuming simple mediating effect of self-efficacy, whereas the simple mediating effects of social support were found only if support was measured at T2 (at the same time when secondary traumatic growth was assessed).

General Discussion

This two-study investigation examined the indirect effects of STS on secondary traumatic growth via perceived social support and secondary trauma self-efficacy. These two mediators were assumed to operate either independently (Hypotheses 1 and 2) or sequentially, that is, with secondary trauma self-efficacy cultivating social support (Hypothesis 3), and/or social support enabling self-efficacy beliefs (Hypothesis 4). Taking into account the findings in both longitudinal studies, general support was obtained for the cultivation hypothesis in the context of the relationship between secondary traumatic stress and secondary traumatic growth.

The partial corroboration of Hypothesis 1 was found in Study 1 when self-efficacy was measured at T2 (Pathway 4); Hypothesis 2 was confirmed in Study 2 when social support was assessed at T2 (Pathway 8). These results, obtained for a group of completers, may suggest that self-efficacy and social support are more likely to mediate the STS—secondary traumatic growth relationship if these mediators are measured more closely to the time when a dependent variable is assessed. This observation needs further investigation because it may shed light on contradictory results of the cross-sectional studies testing the mediating effects of social support or self-efficacy (e.g., Lincoln, Chatters, & Taylor, 2005; Pietrzak et al., 2010).

Another matter requiring further attention is an explanation why we have found partial collaboration for Hypothesis 1 in Study 1 (i.e., for a simple mediating effect of self-efficacy) and for Hypothesis 2 in Study 2 (i.e., for a simple mediating effect of social support). The two primary differences between the two studies were the type of indirect exposure (military versus nonmilitary trauma) and the country where study was conducted (U.S. vs. Poland). Although we do not know if either of these factors may be responsible for the inconsistent results in our studies, there is empirical evidence that direct exposure to battlefield trauma may lead to different outcomes than other types of traumatic exposure, such as civilian terrorism, work, or traffic accidents (Amir, Kaplan, & Kotler, 1996). There is also evidence from studies on direct exposure to trauma that PTSD affects self-related cognitions, such as self-efficacy, more in individualistic cultures (typically Western countries) than in collectivistic cultures (typically Eastern countries; Jobson & O'Kearney, 2008). Moreover, collectivism may function through social support reducing negative consequences of trauma (Moscardino, Scimin, Capello, & Altoè, 2010). The type of indirect exposure and cultural values, such as individualism-collectivism, need to be investigated further as possible factors facilitating or hindering the effects of self-efficacy and social support.

Both studies show robust evidence supporting the cultivation hypothesis. In the context of the relationship between secondary traumatic stress and secondary traumatic growth, self-efficacy facilitated perceived social support when both mediating factors were contextualized in trauma-related work settings. Prior to our study, the cultivation hypothesis has not been tested in the context of secondary traumatization, and it has not been consistently confirmed in other research contexts (cf. Schwarzer & Knoll, 2007). An explanation for the supportive findings with the cultivation hypothesis is that the mediating factors measured were matched to the type of stressful event (i.e., indirect exposure) and the type of outcome (i.e., secondary traumatic growth; Kaniasty & Norris, 1992).

The findings regarding the cultivation hypothesis may have implications for SCT (Bandura, 1997). Social cognitive theory proposes that self-efficacy is a key factor facilitating adaptation in challenging situations. Our results suggest that enhancing self-efficacy helps a long-term adaptational process by facilitating social support. In contrast, enhancing social support without regard for perceptions of self-efficacy may have limited long-term effect on positive outcomes (e.g., perceptions of growth). These results indicate that the interplay between trauma-related consequences and environmental and individual factors may be time-sensitive. Other studies showed that social support may not affect distress one week after a traumatic event; however, it may reduce distress several weeks later (Cook & Bickman, 1990). Moreover, changes in self-efficacy a couple of weeks after trauma have shown to be predictive of subsequent distress 3 months later (Benight, Cieslak, Molton, & Johnson, 2008). Future studies need to consider the time sensitive nature of adaptation processes following indirect exposure to trauma.

The support for of the cultivation hypothesis obtained in both studies may have some practical implications for healthcare workers offering services for traumatized populations. As there are no doubts that offering these kinds of services leads to a higher risk of secondary traumatic stress (Bride et al., 2004), it is important to know what psychological processes may be involved in translating this negative outcome into a positive one (e.g., secondary traumatic growth). Healthcare workers who are at risk for indirect trauma exposure should be offered education about the importance of enhancing specific self-efficacy perceptions and about the role of efficacy beliefs in fostering secondary traumatic growth. However, education alone is rarely enough to promote self-efficacy (Bandura, 1997). Opportunities for skill attainment in the management of STS reactions combined with education will likely yield more empowerment and thus reduce the risk of a negative resource loss spiral (Hobfoll & Lilly, 1993).

Our research has some limitations. Although both of our studies were longitudinal, there were only two measurement points, whereas a four-wave investigation would be optimal to test a sequential multiple mediation model with two mediators. Regarding a methodological limitation related to a longitudinal design, the research procedures did not allow us to explain reasons for dropouts at T2. Furthermore, structural equation modeling could be used for testing the mediational hypotheses and comparing the goodness of fit for Models 1 and 2. Unfortunately, that would require a bigger sample size, which was difficult to achieve considering the specificity of investigated groups. Statistical procedures employed in this article allowed for a robust estimation of indirect effects with the optimal ratio between a sample size and the number of analyzed parameters. Although our assumption was that secondary traumatic growth is a positive outcome and reflects processes of adaptation after indirect exposure to trauma, there are studies indicating that posttraumatic growth may be dysfunctional (Luszczynska et al., 2012). Future investigation of this issue in the context of secondary traumatic growth is required.

Finally, recent research has highlighted the interplay among self-referent thoughts, the presence and absence of positive and negative social support, and secondary traumatic growth (McCormack, Hagger, & Joseph, 2011). Future investigation needs to account for presence (and absence) of both positive and negative support in the relationship between self-efficacy and secondary traumatic growth.

Summarizing, this is the first longitudinal two-study investigation of how social support and self-efficacy operate as mediators between secondary traumatic stress and secondary traumatic growth. Both studies consistently supported the cultivation hypothesis, indicating that self-efficacy being affected by secondary traumatic stress facilitates social support and this indirect pathway contributes to development of secondary traumatic growth.

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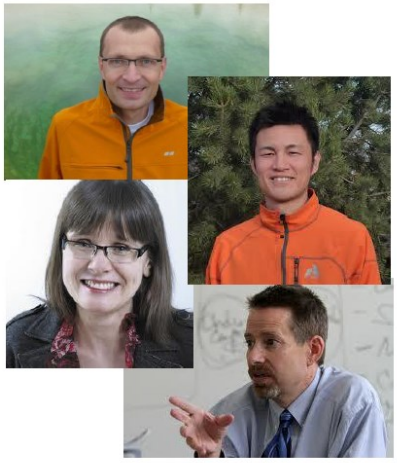
Appendix V: Conference Paper: The relationship between secondary traumatic stress and job burnout: A meta-analysis.

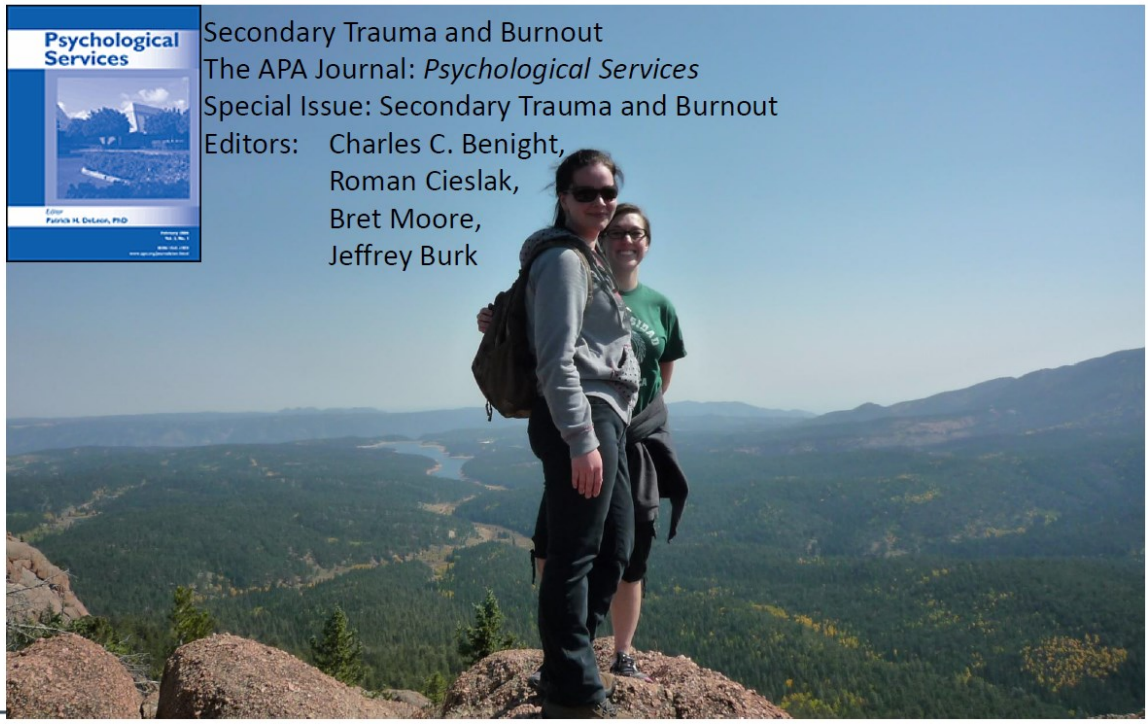
The Relationship Between Secondary Traumatic Stress and Job Burnout: A Meta-Analysis

Roman Cieslak,
Kotaro Shoji,
Charles C. Benight,
Aleksandra Luszczynska



SWPS

Cieslak, R., Shoji, K., Douglas, A., Melville, E., Luszczynska, A., & Benight, C.C. (in press). A Meta-Analysis of the Relationship between Job Burnout and Secondary Traumatic Stress among Workers with Indirect Exposure to Trauma. *Psychological Services*.



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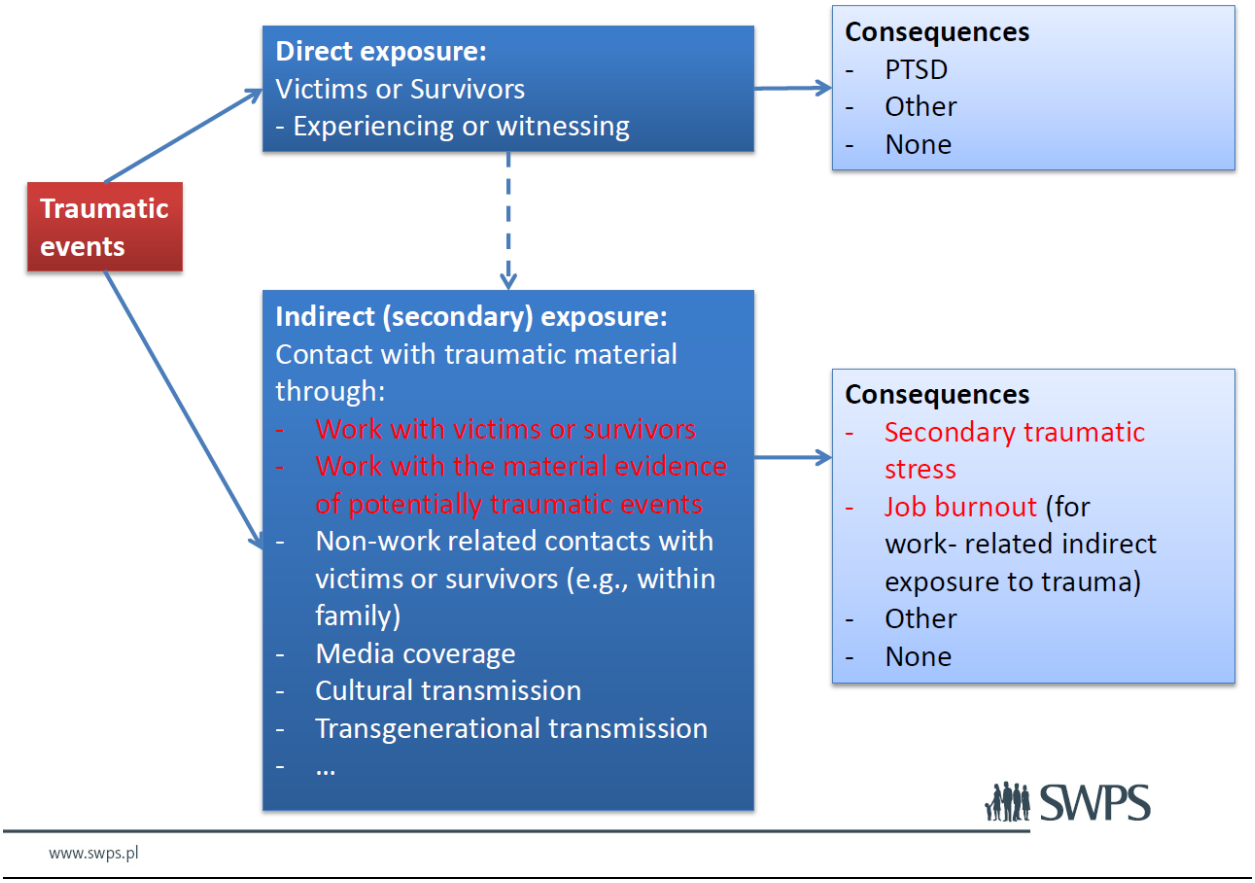
Traumatic events
Direct exposure:
Victims or Survivors
- Experiencing or witnessing
Consequences
- PTSD
- Other
- None
Indirect (secondary) exposure:
Contact with traumatic material through:
- Work with victims or survivors
- Work with the material evidence of potentially traumatic events
- Non-work related contacts with victims or survivors (e.g., within family)
- Media coverage
- Cultural transmission
- Transgenerational transmission
- ...
Consequences
- Secondary traumatic stress
- Job burnout (for work- related indirect exposure to trauma)
- Other
- None
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Aims of the Study

Two negative **consequences of work-related indirect exposure to trauma**:

1. Secondary traumatic stress (STS);
2. Job burnout (JB).

Are these consequences correlated?
Yes, but they should be **only moderately related** (between .30 and .70) as their theoretical frameworks each have a different emphasis.

Differences in **defining and measuring** job burnout and secondary traumatic stress may be crucial for testing the relationship between these two consequences of secondary exposure to trauma.

Understanding possible moderators such as **culture and gender** may offer important insights.

STS: Definitions

Secondary traumatic stress (also called secondary posttraumatic stress; secondary PTSD) is usually conceptualized as reactions resembling PTSD, and thus includes symptoms that are parallel to those observed in people directly exposed to trauma (Bride et al., 2004)

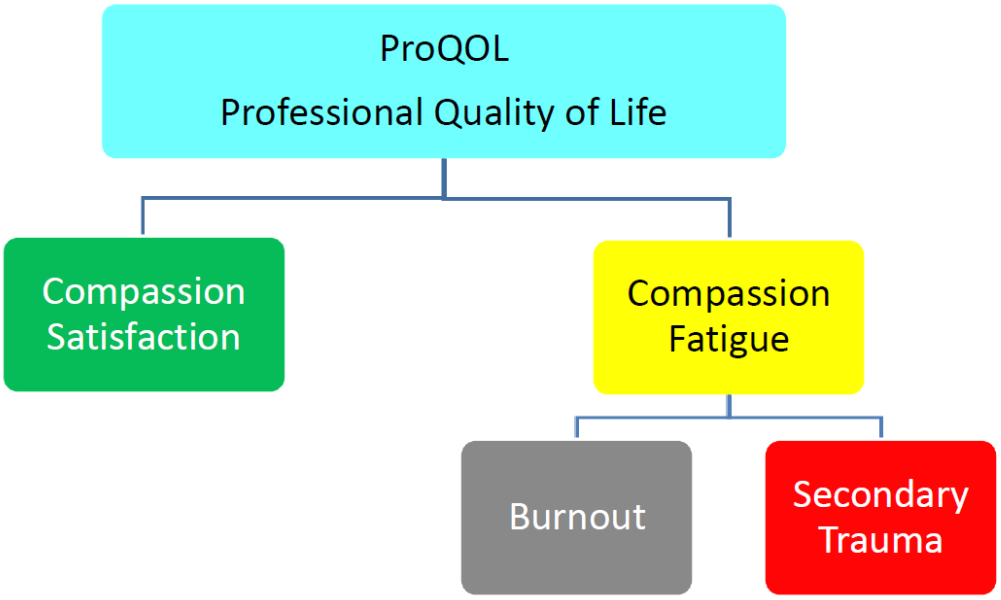
- *Secondary Traumatic Stress Scale* (STSS; Bride et al., 2004), 17 items to measure three clusters of symptoms: intrusive re-experiencing of the traumatic material, avoidance of trauma triggers and emotions, and increased physical arousal (Bride et al., 2004) (see criteria B, C, and D for PTSD).

Vicarious trauma focuses on cognitive effects of indirect exposure. A negative shift in worldview occurs as a result of an empathetic engagement with clients' or patients' traumatic material (Pearlman, 1996).

- *Traumatic Stress Institute Belief Scale, Revision L* (TSI-BSL; Pearlman, 1996) measures vicarious trauma and accounts for cognitive disruptions in the five schema areas: safety, trust, esteem, intimacy, and control.

Compassion fatigue is defined as a reduced empathic capacity or client interest manifested through behavioral and emotional reactions from exposure to traumatizing experiences of others (Adams, et al., 2006).

- *Professional Quality of Life* (ProQOL; Stamm, 2010).



Source: www.proqol.org

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PROFESSIONAL QUALITY OF LIFE SCALE (PROQOL)

COMPASSION SATISFACTION AND COMPASSION FATIGUE
(PROQOL) VERSION 5 (2009)

When you *[help]* people you have direct contact with their lives. As you may have found, your compassion for those you *[help]* can affect you in positive and negative ways. Below are some-questions about your experiences, both positive and negative, as a *[helper]*. Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the *last 30 days*.

1=Never 2=Rarely 3=Sometimes 4=Often 5=Very Often

1. I am happy.
2. I am preoccupied with more than one person I *[help]*.
3. I get satisfaction from being able to *[help]* people.
4. I feel connected to others.
5. I jump or am startled by unexpected sounds.
6. I feel invigorated after working with those I *[help]*.
7. I find it difficult to separate my personal life from my life as a *[helper]*.
8. I am not as productive at work because I am losing sleep over traumatic experiences of a person I *[help]*.
9. I think that I might have been affected by the traumatic stress of those I *[help]*.
10. I feel trapped by my job as a *[helper]*.
11. Because of my *[helping]*, I have felt "on edge" about various things.
12. I like my work as a *[helper]*.
13. I feel depressed because of the traumatic experiences of the people I *[help]*.
14. I feel as though I am experiencing the trauma of someone I have *[helped]*.
15. I have beliefs that sustain me.
16. I am pleased with how I am able to keep up with *[helping]* techniques and protocols.
17. I am the person I always wanted to be.
18. My work makes me feel satisfied.
19. I feel worn out because of my work as a *[helper]*.
20. I have happy thoughts and feelings about those I *[help]* and how I could help them.
21. I feel overwhelmed because my case [work] load seems endless.
22. I believe I can make a difference through my work.
23. I avoid certain activities or situations because they remind me of frightening experiences of the people I *[help]*.
24. I am proud of what I can do to *[help]*.
25. As a result of my *[helping]*, I have intrusive, frightening thoughts.
26. I feel "bogged down" by the system.
27. I have thoughts that I am a "success" as a *[helper]*.
28. I can't recall important parts of my work with trauma victims.
29. I am a very caring person.
30. I am happy that I chose to do this work.

YOUR SCORES ON THE PROQOL: PROFESSIONAL QUALITY OF LIFE SCREENING

Based on your responses, place your personal scores below. If you have any concerns, you should discuss them with a physical or mental health care professional.

Compassion Satisfaction _____

Compassion satisfaction is about the pleasure you derive from being able to do your work well. For example, you may feel like it is a pleasure to help others through your work. You may feel positively about your colleagues or your ability to contribute to the work setting or even the greater good of society. Higher scores on this scale represent a greater satisfaction related to your ability to be an effective caregiver in your job.

The average score is 50 (SD 10; alpha scale reliability .88). About 25% of people score higher than 57 and about 25% of people score below 43. If you are in the higher range, you probably derive a good deal of professional satisfaction from your position. If your scores are below 40, you may either find problems with your job, or there may be some other reason—for example, you might derive your satisfaction from activities other than your job.

Burnout_____

Most people have an intuitive idea of what burnout is. From the research perspective, burnout is one of the elements of Compassion Fatigue (CF). It is associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively. These negative feelings usually have a gradual onset. They can reflect the feeling that your efforts make no difference, or they can be associated with a very high workload or a non-supportive work environment. Higher scores on this scale mean that you are at higher risk for burnout.

The average score on the burnout scale is 50 (SD 10; alpha scale reliability .75). About 25% of people score above 57 and about 25% of people score below 43. If your score is below 43, this probably reflects positive feelings about your ability to be effective in your work. If you score above 57 you may wish to think about what at work makes you feel like you are not effective in your position. Your score may reflect your mood; perhaps you were having a "bad day" or are in need of some time off. If the high score persists or if it is reflective of other worries, it may be a cause for concern.

Secondary Traumatic Stress_____

The second component of Compassion Fatigue (CF) is secondary traumatic stress (STS). It is about your work related, secondary exposure to extremely or traumatically stressful events. Developing problems due to exposure to other's trauma is somewhat rare but does happen to many people who care for those who have experienced extremely or traumatically stressful events. For example, you may repeatedly hear stories about the traumatic things that happen to other people, commonly called Vicarious Traumatization. If your work puts you directly in the path of danger, for example, field work in a war or area of civil violence, this is not secondary exposure; your exposure is primary. However, if you are exposed to others' traumatic events as a result of your work, for example, as a therapist or an emergency worker, this is secondary exposure. The symptoms of STS are usually rapid in onset and associated with a particular event. They may include being afraid, having difficulty sleeping, having images of the upsetting event pop into your mind, or avoiding things that remind you of the event.

The average score on this scale is 50 (SD 10; alpha scale reliability .81). About 25% of people score below 43 and about 25% of people score above 57. If your score is above 57, you may want to take some time to think about what at work may be frightening to you or if there is some other reason for the elevated score. While higher scores do not mean that you do have a problem, they are an indication that you may want to examine how you feel about your work and your work environment. You may wish to discuss this with your supervisor, a colleague, or a health care professional.

WHAT IS MY SCORE AND WHAT DOES IT MEAN?

In this section, you will score your test so you understand the interpretation for you. To find your score on **each section,** total the questions listed on the left and then find your score in the table on the right of the section.

Compassion Satisfaction Scale

Copy your rating on each of these questions on to this table and add them up. When you have added then up you can find your score on the table to the right.

3. ____
6. ____
12. ____
16. ____
18. ____
20. ____
22. ____
24. ____
27. ____
30. ____

Total: ____

The sum of my Compassion Satisfaction questions is	So My Score Equals	And my Compassion Satisfaction level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

Burnout Scale

On the burnout scale you will need to take an extra step. Starred items are "reverse scored." If you scored the item 1, write a 5 beside it. The reason we ask you to reverse the scores is because scientifically the measure works better when these questions are asked in a positive way though they can tell us more about their negative form. For example, question 1. "I am happy" tells us more about the effects of helping when you are *not* happy so you reverse the score

You Wrote	Change to
	5
2	4
3	3
4	2
5	1

*1. ____ = ____
*4. ____ = ____
8. ____
10. ____
*15. ____ = ____
*17. ____ = ____
19. ____
21. ____
26. ____
*29. ____ = ____

Total: ____

The sum of my Burnout Questions is	So my score equals	And my Burnout level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

Secondary Traumatic Stress Scale

Just like you did on Compassion Satisfaction, copy your rating on each of these questions on to this table and add them up. When you have added then up you can find your score on the table to the right.

2. ____
5. ____
7. ____
9. ____
11. ____
13. ____
14. ____
23. ____
25. ____
28. ____

Total: ____

The sum of my Secondary Trauma questions is	So My Score Equals	And my Secondary Traumatic Stress level is
22 or less	43 or less	Low
Between 23 and 41	Around 50	Average
42 or more	57 or more	High

Job Burnout within Compassion Fatigue Framework

Job burnout within compassion fatigue framework is described as being "**associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively"** (Stamm, 2010, p. 13).

Job burnout definition included in compassion fatigue framework **differs** from the more common approaches that focus more on **exhaustion** (e.g. Demerouti et al., 2003; Maslach et al., 2001).

Job Burnout: Three-Component Definition

Job burnout may be defined as "a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by three dimensions: **exhaustion, cynicism, and inefficacy**" (Maslach et al., 2001, p. 397).

- *The Maslach Burnout Inventory – General Survey* (MBI-GS; Maslach et al., 2001).
- *The MBI-Human Services Survey* - in occupations requiring contact with patients
- *the MBI-Educators Survey* – for professionals working with students or pupils
-

Two out of three job burnout components are named differently in MBI-GS than in other MBI versions

Cynicism = Depersonalization
Inefficacy = Reduced personal accomplishment

The Exhaustion-Focused Conceptualizations of Job Burnout

1. "Personal burnout is the degree of physical and psychological fatigue and **exhaustion** experienced by the person" (Kristensen, Borritz, Villadsen, & Christensen, 2005, p. 197) and should be measured in a domain-specific contexts.
   - *The Copenhagen Burnout Inventory (CBI)*: personal, work-related, and client-oriented burnout.

2. "Burnout is a state of physical, emotional, and mental **exhaustion**" (cf. Malach-Pines, 2005, p. 78).
   - *The Burnout Measure (BM)*: the 21-item and 10-item versions.

3. Job burnout "as relating to individuals' feelings of physical, emotional, and cognitive **exhaustion**, thus focusing on continuous depletion of the individuals' energetic coping resources resulting from their chronic exposure to occupational stress" Shirom & Melamed , 2006, p. 179).
   - *The Shirom-Melamed Burnout Measure (SMBM)*: depletion in three areas (physical strength, emotional energy, and cognitive liveliness), 12 items.

A Two-Dimensional Job Burnout Framework

A two-dimensional job burnout framework focuses on **exhaustion** and **disengagement** from work, defined as "distancing oneself from one's work and experiencing negative attitude toward the work objects, work content, or one's work in general" (Demerouti, Bakker, Vardakou, & Kantas, 2003, p. 14).

- *The Oldenburg Burnout Inventory* (OLBI)

Burnout defined as "a consequence of intensive physical, affective, and cognitive strain, i.e., as a long-term consequence of prolonged exposure to certain job demands" (Demerouti et al., 2003, p. 14).

Study Aims

To systematically review and meta-analyze the associations between STS and job burnout
To test the effects of moderators:

(a) The type of **measurement used for STS** assessment (measures of cognitive shift or PTSD-like symptoms *versus* measures of compassion fatigue);
(b) The type of **assessment of job burnout** (the ProQOL burnout subscale *versus* other job burnout instruments, such as the MBI and the OLBI which have clearly defined emotional exhaustion as a key component);
(c) The **theoretical framework** (the compassion fatigue approach *versus* other approaches to job burnout and secondary traumatic stress),

Other potential moderators:

(a) The **country** where the study was conducted (the U.S. versus other countries),
(b) The **continent** where the study was conducted (North America versus others),
(c) The **measurement language** (English or others),
(d) **Gender** (predominantly male sample consisting of at least 75% men versus predominantly female sample consisting of at least 75% women),
(e) **Occupations** with higher likelihood of both direct and indirect work-related trauma exposure (e.g., rescue/emergency workers, nurses, social workers, firefighters) versus occupations that may involve only indirect work-related trauma exposure (e.g. therapists, social workers).

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Literature Search

- Independent studies available before 2012.
- Databases: PILOTS, ScienceDirect, Scopus, and Web of Knowledge.
- Combinations of the keywords:
  - job burnout ("burnout" or "burn-out")
  - secondary traumatic stress ("trauma*", "posttrauma*") - asterisks indicate that a keyword may consist of the stem and any suffix (e.g., "traumatic").
  - "compassion fatigue" and "PTSD".
- Manual searches of the reference lists were conducted.
- At least two of the authors (KS, RC, AD or EM) were involved at all stages of data extraction, coding, synthesis, and analysis.

The initial search resulted in 337 papers.

Inclusion/Exclusion Criteria

(a) STS and job burnout were **measured** at some time point.
(b) The **relationship** between STS and job burnout was assessed, or authors provided appropriate statistics upon request;
(c) Papers reported **statistics** that could be converted into Pearson's coefficient (e.g., t-test, F-test, $\chi 2$, z-test);
(d) Original studies enrolled **workers** performing job tasks involving contact with traumatized clients/patients or traumatic material.
(e) **English-language** publication restriction was applied (although the measurement itself could be in a non-English language).
(f) Dissertations and book chapters were excluded.
(g) Studies applying qualitative methods, narrative reviews, and research on non-workers (e.g., student samples) were excluded.
(h) When two or more studies used the same sample, only one publication was included.

The selection processes resulted in 45 studies meeting all inclusion criteria.
However, four of those studies were excluded from further analysis, because they were identified as outliers with z-scores greater than 10 or less than -10 (Alkema, Linton, & Davies, 2008; Backholm & Björkqvist, 2010; Lauvrud, Nonstad, & Palmstierna, 2009; Maunder et al., 2006).
Thus, **41 original studies were analyzed**.

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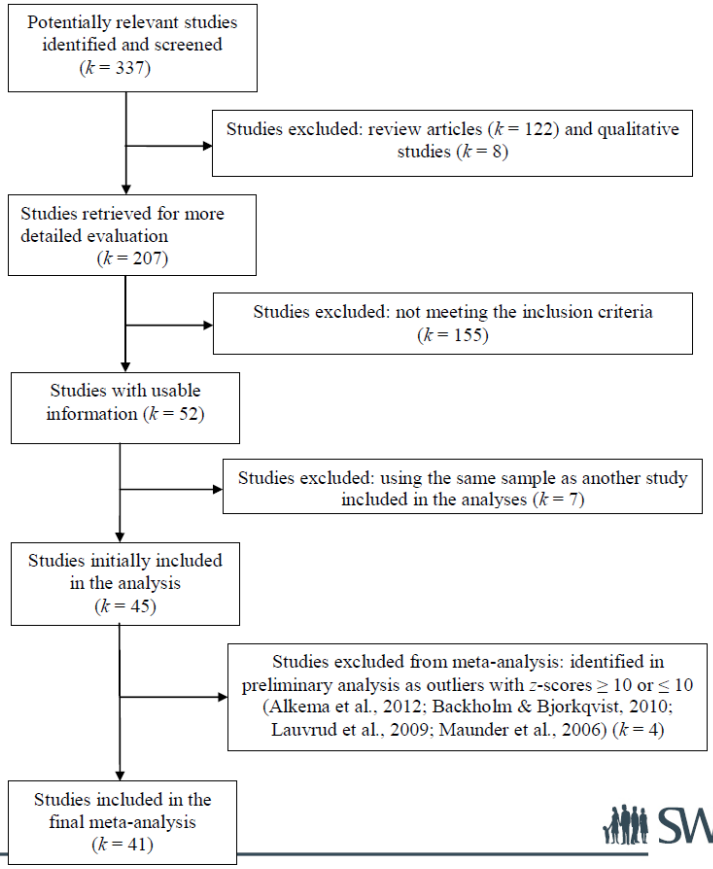
Selection of Studies

k = 337



k = 41

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Description of Analyzed Material

k = 41 original studies.
N = data from 8,256 workers were analyzed .
Sample sizes: varied from 13 to 961 participants (*M* = 198.63 , *SD* = 205.48).
Gender: 59.03% of women in the average sample .

Occupational groups:

- therapists, mental health professionals, social workers, and counselors (36.58%; *k* = 15),
- emergency, ambulance or rescue workers (12.20%; *k* = 5),
- child care workers and child healthcare providers (9.76%; *k* = 4),
- nurses (7.32%; *k* = 3),
- forensic specialists (4.88%; *k* = 2),
- chaplains (4.88%; *k* = 2),
- and other non-categorized professionals (24.39%, *k* = 10).

Description of Analyzed Material

Geography:

- 22 studies (53.66%) in North America
- 4 studies (9.76%) in Israel
- 3 in Italy (7.32%),
- 2 in Australia (4.88%), 2 in the Netherlands (4.88%)

Only 2 multi-country studies (4.88%) - conducted both in Canada and the U.S.
Only 3 studies (7.32%) from Africa or Asia.

Language:

- An English-language version of the questionnaires was applied in 65.85% (k = 27) of the studies.

Description of Analyzed Material

The most popular measures:

- STS was measured within compassion fatigue framework (Figley & Stamm, 1996). These ProQOL-related measures were used in **65.85% of studies** (*k* = 27) and among 5,343 respondents (64.72% of the total sample).
- Job burnout was measured within compassion fatigue framework . The ProQOL was applied in **60.98% of studies** (*k* = 25), with 5,409 (6.51% of the total sample)

Overall, ProQOL was used in **34.15% of studies** (*k* = 14) to assess both STS and burnout constructs.

JB-STS: Overall Effect and Measures and Framework as Moderators

	r	*r* Range	*r* 95% CI	*n*	*k*	*Q*	I^2%	Fail-Safe *N*	*t*
Overall effect	.691	.252-.941	.647-.731	8256	41	478.49*	91.64	10603	-
Measures									
STS measure									39.96**
ProQOL or related	.729	.435-.941	.693-.762	5343	27	153.94*	83.11	14138	
STS as PTSD-like symptoms	.608	.252-.878	.483-.709	2913	14	287.43*	95.48	4829	
Job burnout measure									
ProQOL-related versus other measures									52.33**
ProQOL or related	.744	.505-.941	.710-.775	5409	25	142.39*	83.15	14163	
Other	.589	.252-.878	.471-.687	2847	16	273.58*	94.52	4817	
Framework applied									
Compassion fatigue versus other approaches									51.18**
Only compassion fatigue framework	.744	.505-.941	.707-.776	4958	23	132.03*	83.34	9879	
No measure from the compassion fatigue framework	.578	.252-.878	.426-.699	2462	12	261.60*	95.80	3029	
Compassion fatigue versus mixed approach									44.69**
Only compassion fatigue framework	.744	.505-.941	.707-.776	4958	23	132.03*	83.34	9879	
At least one measure from other framework	.612	.252-878	.509-.697	3298	18	299.43*	94.32	7033	

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JB-STS: Other Moderators

	r	*r* Range	*r* 95% CI	*n*	*k*	*Q*	I^2%	Fail-Safe *N*	*t*
Country									18.00**
USA	.725	.435-.842	.678-.767	3572	19	129.17*	86.07	2698	
Other countries	.675	.256-.941	.604-.736	4132	20	245.87*	92.27	10483	
Continent									3.79**
North America (USA and Canada)	.697	.252-.842	.636-.748	4313	22	252.03*	91.67	5846	
Countries from other continents	.685	.256-.941	.615-.745	3943	19	224.18*	91.97	9797	
Language of applied measures									14.22**
English	.706	.252-.941	.653-.752	4670	27	269.56*	90.36	10994	
Other	.662	.256-.881	.574-.735	3586	14	204.82*	93.65	6395	
Gender									14.58**
Primarily male (at least 75% of males)	.608	.256-.827	.448-.729	1211	6	60.63*	91.75	731	
Primarily female (at least 75% of females)	.692	.252-.878	.594-.769	2744	15	256.61*	94.54	7205	
Occupations									18.27**
With higher likelihood of secondary exposure only	.719	.252-.941	.652-.775	3526	22	271.20*	92.26	2787	
With higher likelihood of both primary exposure and secondary exposure	.662	.256-.827	.601-.715	4730	19	198.42*	90.93	2496	

Summary

Coexistence of STS and JB in professionals exposed indirectly to trauma in their work.
The meta-analysis of 41 studies suggested that the association between these two constructs was high (***r* = .691**), and that these two concepts may share as much as **48%** of the variance.

If both STS and JB are measured within the compassion fatigue approach (i.e., by means of the ProQOL and related measures), the proportion of shared variance is significantly larger than if the measures are derived from any of the other approaches
(**55% versus 34%** of shared variance).

Significantly larger overlap between STS and job burnout may be expected

- if the data are collected **in the U.S**. (compared to other countries);
- If **English-language** versions of questionnaires are applied (compared to other-language versions);
- In primarily **female samples**;
- In occupations which are likely to involve **only indirect exposure** (compared to professionals who are likely to be directly and indirectly exposed to trauma at work).

Thank you!

STS: An umbrella term

We use the umbrella term, **secondary traumatic stress (STS)**, to discuss such effects of secondary exposure as

- secondary posttraumatic stress (Bride et al., 2004),
- vicarious traumatization (McCann & Pearlman, 1990), and
- and secondary traumatic stress aspect of compassion fatigue (Figley, 2002).

Appendix VI: Poster: Secondary trauma self-efficacy scale: Psychometric evaluation.

Secondary Trauma Self-Efficacy scale – psychometric evaluation

Anna Rogala [1], Roman Cieslak [2,1], Kotaro Shoji [2], Aleksandra Luszczynska [2,3], Sandra Taylor [2], Charles Benight [2]

[1] University of Social Sciences and Humanities, Warsaw; [2] University of Colorado at Colorado Springs; [3] University of Social Sciences and Humanities, Wroclaw

ABSTRACT

Background: The aim of our studies was to evaluate the psychometric properties of a new measure of self-efficacy, referring to coping with secondary trauma experiences - the Secondary Trauma Self-Efficacy (STSE) scale.

Methods: Study 1 enrolled professionals (N = 247) providing trauma therapy for military clients in the U.S. Study 2 was conducted among health care and social workers (N = 306 at Time 1, N = 193 at Time 2) providing services for trauma survivors in Poland.

Findings: The results of both studies indicated unidimensionality of the scale, its good reliability, good validity, and invariance across two language versions. As expected, STSE correlated highly or moderately with secondary traumatic stress. The associations between STSE and perceived social support, secondary traumatic growth, negative beliefs about the world and self were either moderate or low.

Discussion: STSE may constitute a key protective resource promoting well-being among people working with trauma victims.

INTRODUCTION

Professionals working with trauma survivors are at increased risk for negative psychological outcomes, such as secondary traumatic stress. **Secondary traumatic stress (STS)** is defined as "intrusion, avoidance, and arousal symptoms associated with indirect exposure to traumatic events via one's professional relationships with traumatized clients" (Bride et al., 2004, p.28).

Self-efficacy may be seen as a important determinant of health-related outcomes of a traumatic event (Benight & Bandura, 2004) - a systematic review (Luszczynska, Benight, & Cieslak, 2009) confirmed "large significant negative associations between self-efficacy and negative consequences of traumatization, such as posttraumatic stress disorder" (Cieslak et al., 2013, p. 4). Although self-efficacy should be assessed context-specific, most studies investigating self-efficacy and health outcomes of secondary trauma exposure assessed work-related self-efficacy.

Because there is no existing measure of secondary trauma self-efficacy, there is also a lack of knowledge about the relationships between self-efficacy and outcomes of secondary trauma exposure among professionals working with trauma survivors. To fill this gap in our study we evaluated the psychometric properties of a new measure of self-efficacy, referring to coping with secondary trauma experiences - the Secondary Trauma Self-Efficacy scale. **Secondary trauma self-efficacy (STSE)** is defined here as "perceived ability to cope with the challenging demands resulting from work with traumatized clients and perceived ability to deal with the secondary traumatic stress symptoms" (Cieslak et al., 2013, p. 5).

OBJECTIVE

The aim of our study was to evaluate the psychometric properties of the Secondary Trauma Self-Efficacy (STSE) scale.

METHODS

Participants:

Study 1: mental healthcare providers working with returning soldiers in the United States, N = 247 (gender: 82 males, 33.2%; age: M = 48.59, SD = 13.02)

Study 2: health care and social workers providing services for civilian survivors of traumatic events
Time 1: N = 306 participants (gender: 71 males, 23.2%; age: M = 35.41; SD = 8.59);
Time 2: N = 193 (gender: 37 males, 19.2%; age: M = 35.05; SD = 8.10).

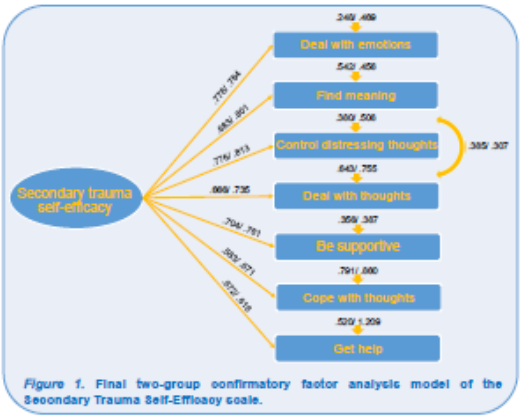

Figure 1. Final two-group confirmatory factor analysis model of the Secondary Trauma Self-Efficacy scale.

Note. Standardized regression weights (i.e., factor loadings), variances, and correlation between error variances are presented. In the final model factor loadings and covariance are constrained to be equal in Study 1 and Study 2. Numbers before the slash refer to Study 1; numbers after the slash refer to Study 2. All parameters significant at $p < .001$.

Measures:

- ***Secondary Trauma Self-Efficacy***. Secondary Trauma Self-Efficacy Scale (Cieslak et al., 2013) - Study 1 (α = .87) and Study 2 (α = .89 at Time 1, α = .88 at Time 2)
- ***Secondary Trauma Exposure***. Secondary Trauma Exposure Scale (Cieslak et al., 2012) - Study 1 and Study 2
- ***Secondary Traumatic Stress***. Secondary Traumatic Stress Scale (Bride et al., 2004) - Study 1 (α = .94) and Study 2 (α = .93)
- ***Perceived Social Support***. Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) - Study 1 (α = .94) and Study 2 (α = .96)
- ***Negative Cognitions***. Posttraumatic Cognition Inventory (Foa et al., 1999) - only Study 1 (total score: α = .89, NC about the World: α = .88, NC about Self: α = .85)
- ***Secondary Traumatic Growth***. Posttraumatic Growth Inventory-Short Form (Cann et al., 2010) - Study 1 (α = .92) and Study 2 (α = .92)

Table 1
Pearson's Correlations among the Study Variables

Measure	1	2	3	4	5	6	7	8
1. Secondary trauma self-efficacy (STSE)		.23***	-.64***	.13**	-	-	.04*	-
2. Perceived social support	.32***		-.17***	.13**	-	-	.04*	.25***
3. Secondary traumatic stress	-.54***	-.33***		-.05**	-	-	.07*	-.69***
4. Secondary traumatic growth	.14***	.14***	.10***		-	-	.05*	.13*
5. Negative cognitions: World	-.32***	.30***	.47***	-.08**	-	-	-	-
6. Negative cognitions: Self	-.51***	-.39***	.56***	-.10**	.52***	-	-	-
7. Direct trauma exposure	.05	-.11	.19***	.10	.16***	-	.12*	-
8. STSE (direct exposure partialled out)	-	.38***	-.55***	.16*	-.32***	-.49***	-	-

Note. Correlations in upper diagonal region show values for Polish data (Study 2). Correlations in lower diagonal region show values for U.S. data (Study 1). Direct trauma exposure in Study 1 represents the number of direct trauma experiences; direct trauma exposure in Study 2 represents whether participants have experienced any of direct traumatic events (with direct exposure dummy coded using 0=No and 1=Yes).
*** $p < .001$, ** $p < .01$, * $p < .05$.

Table 2
Goodness-Of-Fit Statistics for Tests of Invariance of Factor Structure for Study 1 and Study 2

Model Description	χ^2	χ^2/df	RMSEA	CFI	SRMR	GFI	NFI	$\Delta\chi^2$	ΔNFI
Hypothesized model (unconstrained)	51.19	2.01	.043	.966	.036	.974	.972	-	-
Factor loadings, variances, and covariance constrained equal	142.20	3.47	.067	.945	.066	.937	.925	90.02***	.046
Factor loadings constrained equal	62.87	1.97	.042	.963	.045	.969	.967	10.68***	.006
Variances constrained equal	129.10	3.69	.070	.949	.053	.942	.932	76.91***	.041
Covariance constrained equal	53.59	1.95	.041	.966	.036	.974	.972	0.40***	.000
Factor loadings and covariance constrained equal (final model)	62.91	1.91	.041	.964	.045	.969	.967	10.72***	.006

Note. The $\Delta\chi^2$ indicates a change in a χ^2 from the hypothesized model. *** $p < .001$. A significant a $\Delta\chi^2$ value indicates that the model was not good fit for the hypothesized model.

RESULTS

- ✓ The results of exploratory and confirmatory factor analysis showed **unidimensionality of the STSE scale** in both studies.

Principal components analysis: Study 1: one component accounting for 58.69% of the variance (eigenvalue = 3.96). Factor loadings of the items ranged between .71 and .83. Study 2: one component accounting for 61.87% of the variance (eigenvalue = 4.33). Factor loadings for the seven items ranged between .64 and .87.

Confirmatory factor analysis: Study 1: RMSEA = .071 (90% lower and upper confidence limits: .037 and .106), CFI = .970, SRMR = .036 (modified one-factor unconstrained model - items 4 and 5 covaried). Study 2: RMSEA = .050 (90% lower and upper confidence limits: .008, .083), CFI = .991, SRMR = .023 (modified one-factor unconstrained model - items 4 and 5 covaried).

- ✓ The results indicated **good internal consistency** of the STSE scale and its **good stability over time** (Study 1: α = .87. Study 2: α = .89 at Time 1, α = .88 at Time 2; the association between the STSE scores at Time 1 and Time 2 in Study 2: r (191) = .65, $p < .001$)
- ✓ Secondary trauma self-efficacy correlated highly or moderately with secondary traumatic stress (see Table 2)
- ✓ The associations between secondary trauma self-efficacy and perceived social support, secondary traumatic growth, negative beliefs about the world and self were either moderate or low (see Table 2)
- ✓ The STSE factor structure and pattern of correlations with the validity measures were invariant across two studies, which indicated that the **STSE scale may be a culturally unbiased instrument** (see Figure 1 and Table 2)

CONCLUSION

The results confirmed **good psychometric properties of the Secondary Trauma Self-Efficacy (STSE) scale** and verify its theoretically assumed unidimensional structure (Bandura, 1997). They also provide evidence that the STSE scale is a robust measure and suggest that secondary trauma self-efficacy may have similar properties and operate similarly across different cultural contexts. Secondary trauma self-efficacy may constitute a key protective resource promoting well - being among people working with trauma survivors – we propose a new measure to asses it.

For further information read: **Cieslak, R., Shoji, K., Luszczynska, A., Taylor, S., Rogala, A., & Benight, C. C. (2013). Secondary trauma self-efficacy: Concept and its measurement. *Psychological Assessment*. doi: 10.1037/a0032687** (http://psycnet.apa.org/psycinfo/2013-15707-001) or contact: **anna.rogala@swps.edu.pl**

Appendix VII: Book Chapter: Professional Burnout.

28 PROFESSIONAL BURNOUT

Charles Benight and Roman Cieslak

Researchers and practitioners have shown increasing interest in job burnout since the term was coined independently by Herbert J. Freudenberger and Christina Maslach in the late 1970s. As of May 2012 there were 3,682 publications recorded in the Web of Knowledge database that had job or work burnout in the topic. In 2010 there were 419, and in 2011 there were 493 such publications. These numbers show that job burnout is becoming one of the most popular fields of research in occupational health psychology.

The growing interest in job burnout has at least two sources. First, employees themselves have popularized the term "burnout" when describing their difficulties in dealing with intense work demands, challenging clients, and poor organizational resources. Second, occupational health psychologists have become increasingly focused on operationalizing the term, determining methods of assessment, validating different constructs, and applying theoretical systems to map burnout's trajectory. This has led to intriguing debates concerning identification of risk and protective factors linked to burnout in an attempt to generate a knowledge base for intervention strategies. Despite the popular use of the term, the scientific arena is emerging with significant gaps between what we understand intuitively and what we understand through theory and evidence related to job burnout.

DEFINITIONS AND MEASURES

There are many definitions and measures for job burnout. Job burnout is "a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by three dimensions of exhaustion, cynicism, and inefficacy" (Maslach, Schaufeli, & Leiter, 2001, p. 397). Although this definition is the most popular and was used for developing the frequently cited Maslach Burnout Inventory—General Survey (MBI-GS), it is not the only one. Three other definitions suggest that job burnout might be reduced to a single common experience: exhaustion. Each of these definitions has led to developing a different measure: Copenhagen Burnout Inventory (CBI), Burnout Measure (BM), Shirom-Melamed Burnout Measure (SMBM).

Demerouti and her colleagues proposed yet another conceptualization and measure of job burnout (Demerouti, Bakker, Vardakou, & Kantas, 2003). According to their conceptualization, job burnout consists of two dimensions: exhaustion and disengagement from work, which refers to "distancing oneself from one's work and experiencing negative attitude toward the work objects, work content, or one's work in general" (p. 14). Both dimensions are included in the Oldenburg Burnout Inventory (OLBI), an alternative to the MBI-GS. Conceptualization of exhaustion in the OLBI is broader than that in the Maslach measure, as

it is seen as "a consequence of intensive physical, affective, and cognitive strain, i.e., as a long-term consequence of prolonged exposure to certain job demands" (p. 14).

In all of these alternatives to the MBI-GS conceptualizations and measures, professional inefficacy (a hypothetical third component of job-burnout) is consistently regarded as a separate construct. Across all definitions the overarching contributing factor to burnout has been intense prolonged exposure to significant job demands. Burnout might also arise from other less obvious sources.

Recently, job burnout has been also perceived as the consequence of indirect exposure to trauma in professionals working with traumatized clients (Stamm, 2010). Job burnout is understood here in a different way than in other conceptualizations, mentioned above. This type of burnout is "associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively" (p. 13). Job burnout, along with secondary trauma reactions (e.g., post-traumatic stress symptoms) related to indirect trauma exposure, has important negative occupational and personal consequences including changes in cognitive beliefs about the self and the world.

ANTECEDENTS OF JOB BURNOUT

The list of job burnout antecedents is long, and includes both situational and individual factors. Two most frequently cited review papers on job burnout (Cordes & Dougherty, 1993, Maslach et al., 2001) indicated that job burnout might be caused or facilitated by work overload, time pressure, role conflict, role ambiguity, lack of social support, low control over work, low autonomy, and insufficient positive feedback. In addition to these job characteristics, important organizational, social, and cultural values that are not supported or realized through work are critical to consider. The following personality and individual difference factors also were found to be predictive of high job burnout: low hardiness (i.e., low commitment to job, low job control, and tendency to appraise situation more like a threat than a challenge), external locus of control, passive or avoiding coping styles, low self-esteem, and low self-efficacy. Some demographic characteristics that contribute to job burnout include younger age or limited experience, being unmarried or single, and higher level of education.

THEORETICAL MODELS OF JOB BURNOUT

Along with the research aimed at testing the correlates (or antecedents) of job burnout, several theoretical models were proposed to explain processes and psychological mechanisms involved in developing job burnout. One of the popular theories is that job burnout is a prolonged response to chronic work stress. Although this thesis appeals to many practitioners and scientists, there are other symptoms that, along with the job burnout, may be considered the effect of prolonged exposure to chronic job-related stress such as depression and work dissatisfaction. This theory is not specific enough to explain processes that are unique to job burnout.

Other theoretical approaches, so-called developmental models, concentrate on developmental trajectories of job burnout over time. In these approaches, job burnout is not a static constellation of symptoms but a process that, for example, may start from emotional exhaustion leading to cynicism, which finally affects perception of inefficacy at work.

The job demands-resources (JD-R) model is currently the most influential theoretical approach to understand job burnout (Demerouti & Bakker, 2011). According to this model, when defining risk and protective factors for job burnout one should consider the occupational setting. These factors, different for various work settings, can be categorized into two broad categories: job demands and job resources. Job demands refer to those aspects of the job that require effort or skills and therefore lead to some physiological and psychological costs. Job resources relate to components of the job that are helpful in (1) achieving work-related

goals, (2) reducing job demands and costs associated with these demands, and (3) stimulating personal development (Demerouti & Bakker, 2011). Through health impairment and motivational processes, job demands and resources directly, or in interaction with each other, affect job burnout and ultimately affect work engagement. The JD-R model shows that from organizational and individual perspectives it is important to know what factors lead to a negative outcome, such as job burnout. At the same time, however, knowledge about factors promoting positive outcomes, such as work engagement, is also necessary.

WORK ENGAGEMENT

Work engagement is sometimes perceived as the opposite end of the job burnout dimension and therefore is characterized by high energy, involvement, and perceived efficacy at work (Maslach et al., 2001). Another conceptualization of work engagement is of an independent construct, which is negatively correlated with job burnout and defined by three symptoms: vigor (e.g., a high level of energy and persistence), dedication (e.g., involvement and a sense of significance of the job), and absorption (e.g., concentration on a job to the extent that one has a sense of time passing quickly; Bakker, Schaufeli, Leiter, & Taris, 2008). Work engagement is often measured with the Utrecht Work Engagement Scale (UWES, 17- or 9-item version).

JOB BURNOUT AND WORK ENGAGEMENT AMONG PSYCHOLOGISTS

For practitioners, the notion that work engagement is separate from the job burnout phenomenon has important implications. Those practitioners who want to optimize their functioning at work and improve work-related well-being should not only take some actions to prevent job burnout, but also take some, probably different, actions to increase work engagement. In thinking about ways to foster work engagement and reduce job burnout, one must consider both contributing factors of resources and demands. Generating increased resources such as social support may influence work engagement but not reduce burnout. Whereas reducing job demands might positively impact burnout, it may not increase work engagement. Importantly, studies among practicing psychologists have shown that work-home conflict and home-work conflict are positively related to job burnout and that these types of conflicts may mediate the effects of job demands and resources on job burnout (Rupert, Stevanovic, & Hunley, 2009). Thus, determining an appropriate balance between personal and professional demands and resources is an important challenge for all psychologists.

CONSEQUENCES OF JOB BURNOUT

Job burnout has significant consequences (see Maslach et al., 2001 for review). Most of them relate to job performance and subjective well-being or health. Interestingly, the same outcomes are included in studies on consequences of work stress. This indicates possible connections or overlaps between work stress and burnout processes. In terms of job performance, high job burnout is related to higher absenteeism, higher turnover or intention to quit the job, lower effectiveness at work, and low job or organizational commitment. It may also affect organizational standards and culture, making burned out individuals less focused on high quality performance and respecting human values in day-to-day operations.

Discussion of health-related outcomes of job burnout should be contextualized in the existing diagnostic categories and diagnostic systems. Job burnout symptomatology partially reassembles diagnostic criteria for neurasthenia, described in the World Health Organization's International Classification of Diseases (ICD-10) under code F48, "other neurotic disorders." The term "burn-out," defined as a "state of vital exhaustion," may also be found under code Z73.0 in "problems

related to life-management difficulty." Job burnout is not recognized in the *Diagnostic and Statistical Manual* (DSM-IV-TR) but, in the current proposal for the DSM revision, it might be classified under category G 05 "trauma- or stressor-related disorder not elsewhere classified."

Physiological correlates of job burnout are typical of the effects of prolonged exposure to stress and include more frequent and stronger somatic complaints (e.g., headaches, chest pains, nausea, and gastrointestinal symptoms). People with high job stress are also at risk for developing depression and anxiety, but the causality of this relationship is not clear, as both anxiety and depression may also contribute to the development of job burnout.

SPILLOVER AND CROSSOVER EFFECTS OF JOB BURNOUT

Most definitions assume that job burnout is related to only one domain of human functioning (i.e., work and job-related activities). However, the consequences of job burnout may be experienced in other domains of life, such as family life. This interdomain transmission of the effects is called spillover. The example of negative spillover effect might be a situation when family roles or activities are disrupted due to job burnout. Positive spillover may take place when resources from one domain (e.g., family life) are used as a protective factor, acting against developing job burnout or reducing its negative consequences. For example, fulfilled family life and satisfactory family relationships may protect from emotional exhaustion and cynicism.

Whereas spillover is an intrapersonal transfer of consequences across different domains of functioning, crossover is an interpersonal transmutation of consequences. For example, an employee's burnout has an effect on a spouse's burnout and in that indirect way reduces life satisfaction of the spouse (Demerouti, Bakker, & Schaufeli, 2005). These are critical implications to consider in developing new interventions related to burnout.

PREDICTORS OF JOB BURNOUT AMONG MILITARY PSYCHOLOGISTS

There is limited evidence for the prevalence of job burnout and its risk factors among military mental health providers. Ballenger-Browning et al. (2011) showed that in a nonrepresentative sample of 97 providers, 27.8% reported high levels of emotional exhaustion, 18.6% had high levels of depersonalization, and 4.1% had indicated low levels of personal accomplishment, measured with the MBI version for human services (MBI-HSS). The intensity of job burnout among military mental health providers was compared to burnout levels among 730 civilian mental health providers. The results showed that military providers had lower depersonalization and higher personal accomplishment (Ballenger-Browning et al., 2011). The same study showed that risk factors for emotional exhaustion were: being a psychiatrist (comparing to other mental health professions), working long hours, and being female. High depersonalization was predicted by having a high percentage of patients with personality disorders and low percentage of patients with traumatic brain injury in providers' caseloads. Low personal accomplishment was reported more often by those who were not psychologists, were seeing a high number of patients per week, indicated low support from work and reported fewer years of clinical experience.

RECOMMENDATIONS FOR MILITARY PSYCHOLOGISTS

Recommendations for job burnout prevention among military psychologists are difficult to provide given the limited data in this area. However, the general (i.e., useful for a majority of working population) or specific (i.e., unique for job demands in that profession) interventions can focus on the individual or the organization. Given the unique nature of the military hierarchical environment, organizational interventions become more complex. However, efforts should be made to increase workload control, work flexibility, and enhancement

of peer and supervisory support. Individual interventions that promote individual resource development (self-care strategies, work/home balance, symptom processing), professional skill promotion, and social resource enhancement (peer support, friends, etc.) prove to be effective in many cases. Military psychologists (Linnerooth, Mrdjenovich, and Moore, 2011) shared the professional experiences that helped them to cope with job burnout. Although the job demands were different for the predeployment, deployment, and postdeployment phases, the coping mechanisms were similar across these phases and included investment in individual resources (e.g., military and professional trainings), developing social network (family and professional relations), and acting proactively with the awareness that ethics standards and self-care are important parts of military psychologists' jobs. There is more work to be done to help determine the most beneficial methods to assist military psychologists.

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Appendix VIII: Poster: Effects of social support and self-efficacy on secondary traumatic growth.

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Effects of Social Support and Self-Efficacy on Secondary Traumatic Growth

SWPS SZKOŁA WYŻSZA PSYCHOLOGII SPOŁECZNEJ

Judith Bock, Kotaro Shoji, Roman Cieslak, & Charles C. Benight

Abstract

This two-study longitudinal investigation examined the indirect effects of secondary traumatic stress (STS) on secondary traumatic growth via two mediators: perceived social support and secondary trauma self-efficacy. In particular, we tested if the two hypothetical mediators operate sequentially, that is with secondary trauma self-efficacy facilitating social support (i.e., cultivation hypothesis) and/or social support enhancing self-efficacy (i.e., enabling hypothesis).

Introduction

Secondary traumatic stress (STS) results from indirect exposure to trauma (Bride, Robinson, Yegidis, & Figley, 2004) and has a set of symptoms that is similar to posttraumatic stress disorder (PTSD). This indirect exposure to trauma is typified by healthcare providers working with traumatized individuals. Although it has been associated with many negative consequences, including higher distress, increased negative cognitions (Pearlman & Mac Ian, 1995), and higher job burnout (Ballenger-Browning et al., 2011), recent research highlighted the importance of positive changes, such as meaning making (Park & Ai, 2006) or posttraumatic growth (Cann et al., 2010). In these two studies, the term secondary traumatic growth is used to refer to positive changes in schemas about self and the world and perceived psychological growth that trauma-focused providers experience as a result of their work. Using Social Cognitive Theory (SCT; Bandura, 1997) as our theoretical framework, we argue that social support and self-efficacy serve as key mediators in the association between STS and secondary traumatic growth. However, there are two alternative hypotheses explaining the relationship between self-efficacy and social support. The cultivation hypothesis suggests that self-efficacy facilitates social support, whereas the enabling hypothesis states that social support enhances and protects self-efficacy (Schwarzer & Knoll, 2007). Although both the cultivation and enabling hypotheses have been supported by empirical findings, no studies have examined these hypotheses in the context of indirect exposure to trauma. We tested competing hypotheses. The effect of STS on secondary traumatic growth would be: a) mediated first by secondary trauma self-efficacy and then by perceived social support (cultivation hypothesis) or b) perceived social support would lead self-efficacy (enabling hypothesis).

Method

Participants

Participants in **Study 1 (N = 293 at Time 1, N = 115 at Time 2)** were behavioral healthcare providers working with U.S. military personnel suffering from trauma. **Study 2** was conducted among Polish healthcare workers **(N = 298 at Time 1, N = 189 at Time 2)** providing services for civilian survivors of traumatic events.

Measures.

Secondary Traumatic Stress. Secondary Traumatic Stress Scale (Bride et al., 2004)

Secondary trauma self-efficacy. The secondary Trauma Self-Efficacy (STSE) Scale (Cieslak et al., 2013).

Perceived social support. The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988).

Secondary Traumatic Growth. Posttraumatic Growth Inventory-Short Form (PTGI-SF; Cann et al., 2010)

Indirect Exposure to Trauma. Secondary Trauma Exposure Scale (Cieslak et al., in press)

Procedures.

Participants from both Study 1 and Study 2 completed a set of questionnaires evaluating STS, perceived social support, secondary trauma self-efficacy, and secondary traumatic growth. Additionally, indirect exposure to trauma and demographic variables were assessed as possible factors that should be controlled when testing the hypotheses.

Results

In both studies, multiple mediational analyses showed evidence for the cultivation hypothesis (Figure 1). The relationship between STS at Time 1 and secondary traumatic growth at Time 2 was mediated sequentially by secondary trauma self-efficacy at Time 1 and social support at Time 2. The enabling hypothesis was not supported in either study (Figure 2).

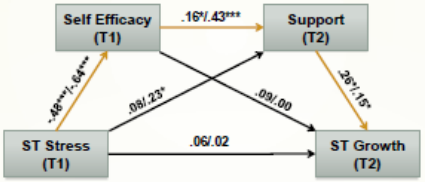

Figure 1: Multiple mediation analysis of **cultivation hypothesis** (Study 1 coefficient β/Study 2 coefficient β).

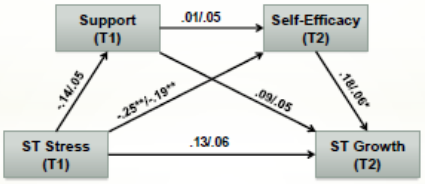

Figure 2: Multiple mediation analysis of **enabling hypothesis** (Study 1 coefficient β/Study 2 coefficient β).

In both Study 1 and Study 2, after controlling for the effects of three covariates (i.e., T1 indirect exposure to trauma, T1 social support, and T1 secondary traumatic growth), path analyses supported the cultivation hypothesis. High secondary traumatic stress (T1) was related to lower secondary trauma self-efficacy (T1), which in turn predicted lower social support (T2), and then lower social support (T2) was related to lower secondary traumatic growth (T2). Indirect effects were tested using the bootstrapping method with 95% confidence interval.

Table 1: Mediating Effects of Perceived Social Support and Secondary Trauma Self-Efficacy in the Relationship between Secondary Traumatic Stress and Secondary Traumatic Growth

Indirect Effects Pathways	B	SE	BC 95% CI		Effect size
			Lower	Higher	ab_{ps}
Study 1: Model 1					
STS T1 → ST Self-Efficacy T1 → ST Growth T2	-.079	.095	-.289	.081	-.061
STS T1 → Support T2 → ST Growth T2	.042	.046	-.022	.171	.033
Cultivation hypothesis: STS T1 → ST Self-Efficacy T1 → Support T2 → ST Growth T2	-.041	.029	-.136	-.002	-.032
Study 1: Model 2					
STS T1 → ST Self-Efficacy T2 → ST Growth T2	-.100	.056	-.231	-.008	-.077
STS T1 → Support T1 → ST Growth T2	-.030	.045	-.163	.021	-.024
Enabling hypothesis: STS T1 → Support T1 → ST Self-Efficacy T2 → ST Growth T2	-.001	.006	-.022	.006	-.001
Study 2: Model 1					
STS T1 → ST Self-Efficacy T1 → ST Growth T2	-.001	.072	-.148	.134	-.001
STS T1 → Support T2 → ST Growth T2	.048	.029	.008	.130	.048
Cultivation hypothesis: STS T1 → ST Self-Efficacy T1 → Support T2 → ST Growth T2	-.058	.029	-.137	-.015	-.058
Study 2: Model 2					
STS T1 → ST Self-Efficacy T2 → ST Growth T2	-.016	.025	-.081	.023	-.016
STS T1 → Support T1 → ST Growth T2	.004	.012	-.009	.051	.004
Enabling hypothesis: STS T1 → Support T1 → SE Self-Efficacy T2 → ST Growth T2	.000	.001	-.000	.006	.000

Discussion

This is the first longitudinal two-study investigation of how social support and self-efficacy operate as the mediators between secondary traumatic stress and secondary traumatic growth. Both studies consistently supported the cultivation hypothesis, indicating that self-efficacy beliefs mediate the relationship between STS and secondary traumatic growth through facilitation of social support.

Prior to our study, the cultivation and enabling hypotheses had not been tested in the context of secondary traumatization. These findings are only strengthened by the robust evidence supporting the cultivation hypothesis across both Study 1 and Study 2, each of which used different populations.

The findings regarding the cultivation hypothesis may have implications for SCT (Bandura, 1997) and support programming for trauma care providers. SCT proposes that self-efficacy is a key factor inter-relating with environmental factors facilitating adaptation in challenging situations. Our results suggest that enhancing self-efficacy helps a long-term adaptational process by facilitating social support. Thus, the greater the perceived efficacy for managing STS the greater the capacity to utilize a key environmental resource. Staff support programs focusing on the enhancement of secondary traumatic growth may benefit from boosting self-efficacy with the intent to facilitate perceived social support.

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Appendix IX: Poster: Indirect effect of job burnout on job engagement.

Indirect Effect of Job Burnout on Job Engagement

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SWPS SZKOŁA WYŻSZA PSYCHOLOGII SPOŁECZNEJ

Abstract

The present study investigated the mediation effects of secondary trauma self-efficacy and perceived social support in the relationship between job burnout and job engagement among healthcare providers indirectly exposed to trauma through their work. Cultivation and enabling hypotheses are two alternative explanations that involve self-efficacy and social support as mediators. We tested these two hypotheses using a longitudinal design in two studies. Results showed that the cultivation hypothesis was supported in both Study 1 and 2, whereas the enabling hypothesis was not supported in either study. Implications of the results on future research and the importance of coping self-efficacy in supportive interventions are discussed .

Introduction

Many healthcare providers are consistently exposed to indirect trauma through their working with clients. Evidence suggests that there is a number of negative consequences of indirect trauma exposure, including secondary traumatic stress (Bride et al., 2011), job burnout (Kadambi & Truscott, 2007) and low work engagement. However, little is know about the relationship between job burnout and job engagement among healthcare providers who are exposed to indirect trauma. Less is known concerning the psychological processes that mediate this relationship. In social cognitive theory, coping self-efficacy is a key component in the internal-evaluative process of adaptation to challenge and uncertainty. Social support is a critical environmental resource that helps individuals manage stress. The directionality of relationship between these two resources has important implications for understanding and intervening on the job burnout-work engagement relationship.

Cultivation and enabling hypotheses are two alternative explanations that involve the mediation effects of social support and self-efficacy in the relationship between stress and its consequences. The cultivation hypothesis suggests that self-efficacy facilitates social support, whereas the enabling hypothesis states that social support enhances and protects self-efficacy. **This two-study longitudinal investigation examined the indirect effects of job burnout on work engagement via perceived social support and secondary trauma self-efficacy among healthcare providers.**

Method

Participants

The study was a part of a larger project investigating secondary trauma, work-related demands, and resources among healthcare providers.

Inclusion criteria .
(a) Working at least one year as a healthcare provider (e.g., physician, nurse), clinical psychologist, counselor, or social worker.
(b) Being indirectly exposed to trauma through interaction with patients.
(c) Study 1: Providing services for a military population.

Study 1 (*N* at T1 = 293, *N* at T2 = 131): Mental healthcare providers working with the U.S. military personnel suffering from trauma.
Study 2 (*N* at T1 = 298, *N* at T2 = 189): Healthcare and social workers providing services for civilian survivors of traumatic events in Poland.

Table 1. Measures

Variable	Measurement	α			
		Study 1		Study 2	
		Time 1	Time 2	Time 1	Time 2
Job burnout	Oldenburg burnout Inventory (Halbesleben et al., 2005)	.81	.85	.81	.78
Perceived Social Support	Multidimensional Scale of Perceived Social Support (Zimet et al., 1988)	.94	.94	.96	.96
Secondary Trauma Self-Efficacy	Secondary Trauma Self-Efficacy Scale (Cieslak et al., 2013)	.87	.91	.89	.88
Work Engagement	Utrecht Work Engagement Scale-9 Item Version (Schaufeli et al., 2006)	.91	.90	.89	.89
Organizational Constraints	Organizational Constraints Scale (Spector & Jex, 1998)	.90	.90	.85	

Procedures

Participants responded to online questionnaires that assessed work engagement, job burnout, perceived social support, secondary trauma self-efficacy, and organizational constraints for Time 1 and Time 2. Mean time elapsed between Time 1 and Time 2 was 193.95 days for Study 1 and 161.91 days for Study 2.

Results

- There was the serial mediation effect of secondary trauma self-efficacy at Time 1 and perceived social support at Time 2 in the relationship between job burnout at Time 1 and job engagement at Time 2 (Figure 1). This result supported the cultivation hypothesis.
- The relationship between job burnout at Time 1 and job engagement at Time 2 was mediated by the pathway through perceived social support at Time 1 and Time 2 in both Study 1 and 2.
- The pathway through secondary trauma self-efficacy at Time 1 and Time 2 mediated the effect of job burnout at Time 1 on work engagement at Time 2 in Study 2.

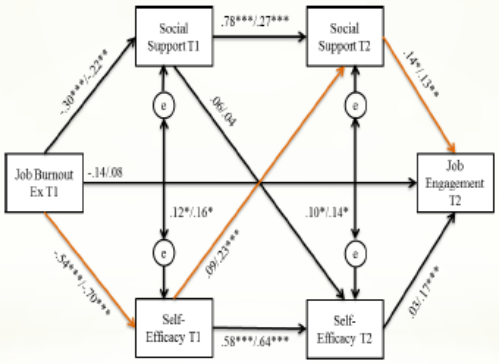

Figure 1. Cross-Lagged Analysis Testing the Cultivation and Enabling Hypotheses.
Note: * $p < .05$, ** $p < .01$, *** $p < .001$. The orange line indicates a serial mediation effect. Values before the slash indicate values for Study 1. Values after the slash indicate values for Study 2.

Table 2. Goodness-of-Fit Statistics for Comparisons of the Models

Model Description	χ^2	χ^2/df	RMSEA	CFI	SRMR	GFI	NFI	$\Delta\chi^2$	ΔNFI
Study1									
Hypothesized Model	36.17	2.26	.098	.963	.072	.947	.938	-	-
Model without SE1-SS2 Pathway	39.03	2.30	.100	.959	.077	.943	.933	2.87	.005
Model without SS1-SE2 Pathway	36.80	2.17	.095	.964	.074	.945	.937	0.64	.001
Model without Both Pathways	39.87	2.22	.097	.960	.081	.941	.931	3.71	.006
Study 2									
Hypothesized Model	44.80	2.80	.098	.953	.057	.954	.931	-	-
Model without SE1-SS2 Pathway	55.08	3.24	.109	.938	.070	.945	.916	10.28***	.016
Model without SS1-SE2 Pathway	45.32	2.66	.094	.954	.058	.953	.931	0.52	.001
Model without Both Pathways	55.82	3.10	.106	.939	.072	.944	.915	11.02***	.017

Note. ** $p < .01$. *** $p < .001$. The $\Delta\chi^2$ indicates a change in a χ^2 from the hypothesized model. A significant $\Delta\chi^2$ value indicates that the model was significantly different from the hypothesized model. SE1: Secondary trauma self-efficacy at Time 1. SE2: Secondary trauma self-efficacy at Time 2. SS1: Perceived social support at Time 1. SS2: Perceived social support at Time 2.

Goodness-Of-Fit Indices Comparisons (Table 2).

- For Study 2, a change score in chi-square values indicated that the model without pathway between secondary trauma self-efficacy at Time 1 and perceived social support at Time 2 had a significantly higher chi-square score than did the hypothesized model, indicating the model without this pathway had worse model fit than did the hypothesized model.
- The model without pathway between perceived social support at Time 1 and secondary trauma self-efficacy at Time 2 was not significantly different than the hypothesized model for both Study 1 and 2.
- When both of these pathways were excluded from the model, a chi-square score for the model was significantly larger than that of the hypothesized model for Study 2, suggesting the model without these pathways had worse model fit than did the hypothesized model.

Discussion

Results of Study 1 partially supported the cultivation hypothesis, and results of Study 2 fully supported this hypothesis. The enabling hypothesis was not supported in either Study 1 or Study 2. The support for the cultivation hypothesis suggests that enhancing self-efficacy facilitates perceived social support in a long term, and higher perceived social support is an important factor to foster job engagement.

A slightly different results for the cultivation hypothesis between Study 1 and 2 may be due to cultural differences and the contexts in which these studies were conducted (i.e., military trauma vs. civilian trauma). It may be that social support resources within a military provider context are less connected to one's perceived individual coping capabilities.

The present study showed a psychological process involving secondary trauma self-efficacy and social support as mediators in the relationship between job burnout and job engagement among healthcare providers. The present study is uniquely different from other studies supporting the enabling hypothesis (e.g., Benight et al., 1999; Cieslak et al., 2009) in that the present study investigated the population exposed to indirect trauma through their work as opposed to populations exposed to direct trauma. In addition, the present investigation is the first study to show the long-term cultivation process in the effect of job burnout on job engagement.

Healthcare workers exposed to indirect trauma may benefit from an educational support program that involves importance of enhancing self-efficacy to facilitate social resources and job engagement in a long-term. Educating healthcare workers about the psychological process of the effect of job burnout on job engagement may be beneficial to foster job engagement as well.

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Appendix X: Conference Paper: A meta-analysis of the relationship between self-efficacy and job burnout.

A meta-analysis of the relationships between self-efficacy and job burnout

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Kotaro Shoji,
Anna Rogala,
Ewelina Smoktunowicz,
Aleks Luszczynska,
Charles C. Benight

First Things First

This study was supported by:

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Shoji, K., Cieslak, R., Smoktunowicz, E., Rogala, A., Luszczynska, A., & Benight, C.C. (2013). *Associations between Job Burnout and Self-Efficacy: A Meta-Analysis*. Manuscript submitted for publication.

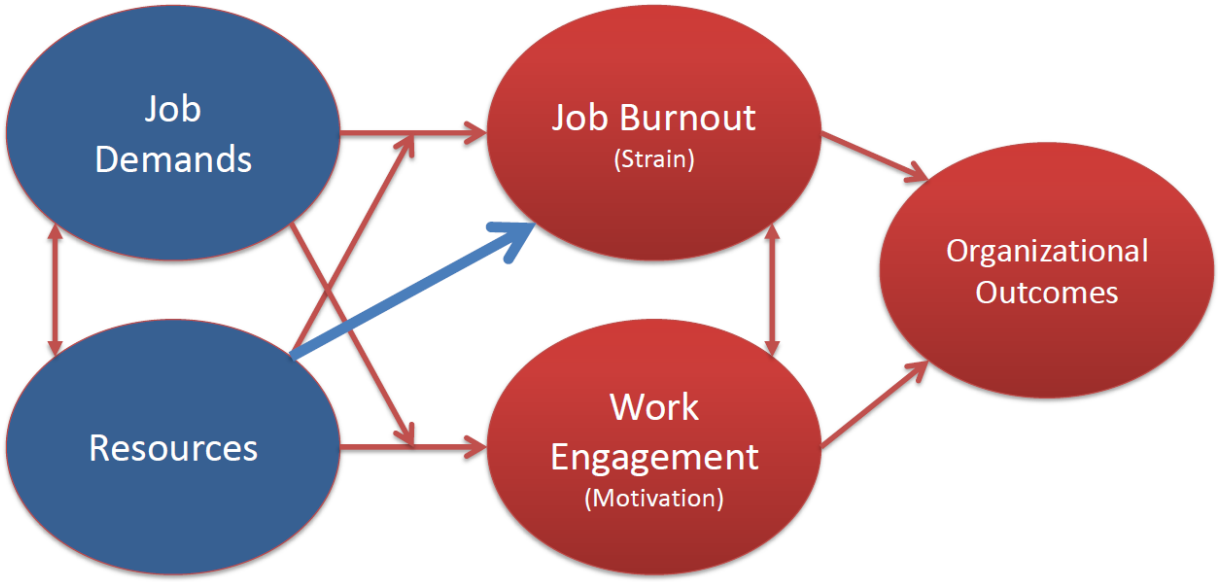
We Know What, but WHY?

What: To investigate the relationship between self-efficacy and job burnout

WHY:

1) To contribute to the validity of the Job Demands-Resources (JD-R) model
2) To investigate possible conceptual overlap between self-efficacy and one of the job burnout components: inefficacy (i.e., reduced personal accomplishment)

Job Demands – Resources Model (JD-R)



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Demerouti & Bakker, 2011

Job Burnout: A Three-Factor Definition

Job burnout (JB) is "a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by three dimensions: **exhaustion, cynicism, and inefficacy**" (Maslach et al., 2001, p. 397).

- *The Maslach Burnout Inventory – General Survey* (MBI-GS; Maslach et al., 2001)
- *The MBI-Human Services Survey* – in occupations requiring contact with patients
- *The MBI-Educators Survey* – for professionals working with students or pupils

Two JB components have different names in the MBI-GS than in other MBI versions:

Cynicism = Depersonalization

Inefficacy = Reduced personal accomplishment

Job Burnout: Other Approaches

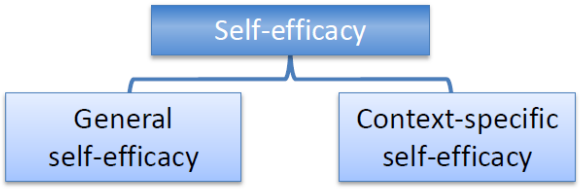
Job burnout within compassion fatigue framework is described as a „**feeling of hopelessness and difficulties in dealing with work or in doing job effectively"** (Stamm, 2010, p. 13).
- *Professional Quality of Life* (ProQOL; Stamm, 2010)

The exhaustion-focused conceptualizations of job burnout.
Job burnout is defined "as relating to individuals' feelings of physical, emotional, and cognitive **exhaustion**, thus focusing on continuous depletion of the individuals' energetic coping resources resulting from their chronic exposure to occupational stress" Shirom & Melamed, 2006, p. 179).
- *The Shirom-Melamed Burnout Measure* (SMBM; Shirom & Melamed, 2006)

A two-dimensional job burnout framework focuses on **exhaustion** and **disengagement** from work, defined as "distancing oneself from one's work and experiencing negative attitude toward the work objects, work content, or one's work in general" (Demerouti, Bakker, Vardakou, & Kantas, 2003, p. 14).
- *The Oldenburg Burnout Inventory* (OLBI; Demerouti, Bakker, Vardakou, & Kantas, 2003)

Self-Efficacy Definition

Self-efficacy (S-E) within Social Cognitive Theory is conceptualized as a personal resource that refers to **"people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives"** (Bandura, 1994, p. 72).



The context-specific self-efficacy demonstrates stronger associations with stress outcomes than self-efficacy conceptualized and measured as a general construct (Bandura, 1997).

Contradictory Evidence

Opposite results from **two systematic reviews** of the relationship between self-efficacy and job burnout:

1. Alarcon et al., 2009: **The strongest associations** were observed between self-efficacy and one of the job burnout components: reduced personal accomplishment.
   (review focused on teachers, general and context-specific self-efficacy measures);

2. Brown, 2012: The associations between job burnout and reduced personal accomplishment appeared **less frequently** than the associations between self-efficacy and the two other job burnout components
   (only general self-efficacy measures).

Conclusion: Moderators must be considered in the following reviews.

Study Aims

To systematically review and meta-analyze the associations between self-efficacy and job burnout (the global index and its components).

To test the effects of moderators:

a) The type of a **job burnout measure** (MBI-related measures *versus* non-MBI-related measures);
b) The type of a **self-efficacy measure** (general self-efficacy scales *versus* context-specific self-efficacy scales);
c) **Occupation** (healthcare providers *versus* teachers *versus* other human services workers);
d) Years of **work experience** (lower 33% *versus* middle 33% *versus* upper 33%);
e) **Gender** (majority of male [more than 66%] *versus* equal gender proportion [33% - 66%] *versus* majority of females [more than 66%]);
f) The **cultural context:**
   - **country** (Western [e.g., U.S. Spain, Netherlands] *versus* other countries [e.g., China, Philippines, Turkey]),
   - **language** (English *versus* non-English languages).

Literature Search

- Independent studies available before 2013.
- Databases: Search Complete, Agricola, Business Source Complete, ERIC, Medline, PsychARTICLES, PsychINFO, Science Direct, SocINDEX, and Web of Knowledge.
- Combinations of the keywords:
  - self-efficacy ("self-efficacy")
  - job burnout ("burnout", "burn out", and "burn-out")
- Manual searches of the reference lists were conducted.
- At least two of the authors were involved at all stages of data extraction, coding, synthesis, and analysis.
- Cochrane systematic review method was applied (Higgins & Green, 2008).

The initial search resulted in 214 studies.

Inclusion/Exclusion Criteria

(a) Self-efficacy and job burnout were **measured** at some time point;
(b) The **relationship** between self-efficacy and job burnout was assessed or authors provided appropriate statistics upon request;
(c) Papers reported **statistics** that could be converted into Pearson's coefficient (e.g., *t*-test, *F*-test, χ^2, Cohen's *d*);
(d) Only studies on **workers;**
(e) **English-language** publication restriction was applied (although the measurement itself could be in a non-English language);

(f) Dissertations and book chapters were excluded;
(g) Studies applying qualitative methods, narrative reviews were excluded;
(h) When two or more studies used the same sample, only one study with a larger sample size was included;
(i) When multiple studies using different samples were reported in a paper, each study was included as an independent study.

Quality criteria

In addition, quality criteria were applied. Studies were qualitatively evaluated on:
(a) Whether **reliability** of the measures was reported;
(b) Whether **confounding variables** were controlled;
(c) Whether **randomized sampling** was used to draw a sample from its population;
(d) Whether **demographics** of a sample were reported;
(e) Whether **a study objective** was clearly stated.

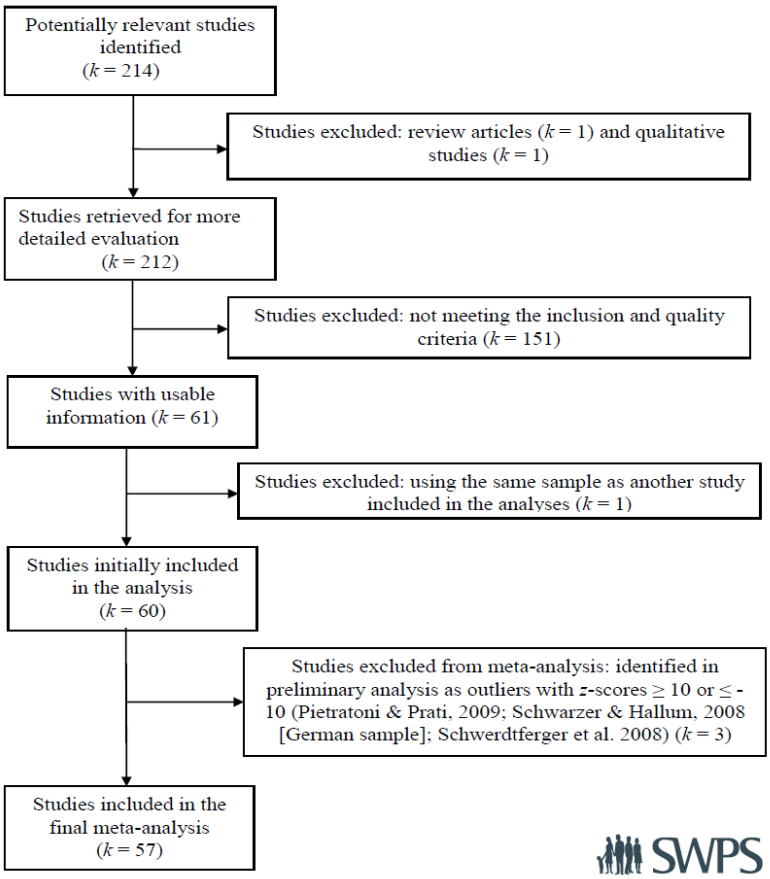
Only studies that met **at least four criteria were included**.

The selection processes resulted in **60 studies** meeting all inclusion criteria and quality criteria.
However, three of those studies were excluded from further analysis, because they were identified as **outliers** based on the criteria with *z*-scores greater than 10 or less than -10 (Pietratoni & Prati, 2009; Schwarzer & Hallum, 2008 [German sample only]; Schwerdtferger, Konermann, & Schönhofen, 2008)

Thus, **57 original studies were analyzed**.

Selection of Studies

k = 214



k = 57

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Description of Analyzed Material

k = 57 original studies.
N = data from 22,773 workers were analyzed .
Sample sizes: varied from 39 to 2,267 participants (*M* = 399.53, *SD* = 453.73).
Age: *M* = 39.10; *SD* = 6.38; range = 25.50 – 56.00
Years of work experience: *M* = 12.16; *SD* = 5.59; range = 1.33 – 22.14

Occupational groups:
- Teachers (50.88%; *k* = 29)
- Healthcare providers (29.82%; *k* = 17)
- Other human services workers (19.30%, *k* = 11)

The most popular scales:
- Job burnout was measured with the MBI in **94.73% of studies** (*k* = 54)
- Self-efficacy was measured with the GSES in **29.82% of studies** (*k* = 17)

Description of Analyzed Material

Geography:

- 12 studies (21.05%) in North America (11 in US, 1 in Canada)
- 6 studies (10.52%) in Hong-Kong, 6 (10.52 %) in the Netherlands, 6 (10.52%) in Spain
- 5 studies (8.77%) in Italy
- 3 studies (5.26%) in Israel, 3 (5.26 %) in Norway, 3 (5.26%) in UK
- 2 studies (3.50%) in Belgium
- 1 study (1.75%) in France, 1 (1.75%) in Ireland, 1 (1.75%) in Philippines, 1 (1.75%) in Poland, 1 (1.75%) in Romania, 1 (1.75%) in Sweden, 1 (1.75%) in Syria, 1 (1.75%) in Taiwan, 1 (1.75%) in Turkey

Only 2 multi-country studies (3.50%) – 1 in EU, 1 in Israel, NZ and US.

Language:

- An English-language version of the questionnaires was applied in 33.33% (k = 19) of the studies

Only in 1 study (1.75%) both English and Chinese versions of the questionnaires were applied.

SE-JB: Overall Effect and Measures and Occupation as Moderators

	r	*r* Range	*r* 95% CI	*n*	*k*	*Q*	I^2%	Fail-Safe *N*
Overall effects								
SE – JB	-.327	-.609 – .224	-.366 – -.288	22,773	57	568.07***	90.14	19,714
SE – Exhaustion	-.309	-.549 – .007	-.345 – -.277	16,492	42	236.83***	82.69	3,282
SE – Depersonalization/cynicism	-.322	-.561 – -.050	-.372 – -.271	16,201	39	435.651***	91.28	3,826
SE – Lack of accomplishments	-.475	-.752 – -.068	-.532 – -.414	12,543	34	542.94***	93.92	10,802
Moderator								
JB measure								
MBI measures	-.339	-.609 – .224	-.379 – -.297	18,879	50	449.40***	89.10	13,783
Other measures	-.246	-.553 – .045	-.348 – -.139	3,894	7	63.92***	90.61	323
SE measure								
General SE	-.301	-.553 – -.122	-.351 – -.249	9,416	20	121.90***	84.41	3,554
Specific SE	-.341	-.609 – .224	-.394 – -.286	13,357	37	415.13**	91.33	2,679
Occupation								
Teachers	-.380	-.598 – .224	-.432 – -.326	10,882	29	260.28***	89.24	10,718
Healthcare providers	-.264	-.498 – -.095	-.302 – -.224	8,615	17	43.60***	63.31	1,948
Other	-.273	-.609 – .045	-.375 – -.163	3,557	11	113.13***	91.16	592

SE-JB: Other Moderators

	r	*r* Range	*r* 95% CI	*n*	*k*	*Q*	I^2%	Fail-Safe *N*
Work experience								
Less than 9 years (lower 33%)	-.278	-.379 – .045	-.366 – -.185	3,219	11	70.79***	85.87	581
Between 9 and 14 years (middle 33%)	-.265	-.513 – .224	-.372 – -.151	4,336	11	137.21***	92.71	732
More than 14 years (higher 33%)	-.390	-.598 – -.149	-.471 – -.303	3,458	12	87.46***	87.42	1,538
Country								
Western	-.333	-.609 – .045	-.377 – -.289	16,589	41	370.62***	89.21	6,316
Other	-.305	-.519 – .224	-.408 – -.195	5,397	13	186.07***	93.55	1,341
Language								
English	-.306	-.609 – .450	-.372 – -.237	5,661	19	123.42***	85.41	1,916
Other	-.339	-.598 – .224	-.387 – -.288	16,452	36	415.67***	91.58	5,180

Summary and a take-home message

- The meta-analysis of 57 studies indicated a moderate association between self-efficacy and job burnout (**weighted *r* = -.327**); these two concepts shared approximately **11%** of the variance.

  → JD-R context: there is a direct link between resources (self-efficacy) and JB.
  → We know nothing about the causality of the effect.
  → The relationship is moderated by several factors.

- The strongest relationship was found for reduced personal accomplishment and self-efficacy
  (**weighted *r* = -.475**, and **23%** of shared variance).

  → Some conceptual overlap between JB and SE constructs exists.

Appendix XI: Poster Abstract: SupportNet: Preliminary results of a randomized controlled trial.

Background: Behavioral healthcare providers for military personnel are often exposed to indirect trauma through their work with clients; the rate of secondary traumatic stress (STS) among these providers has been estimated at 19.2%. Because STS is highly correlated with job burnout, these providers experience a high probability of suffering the effects of burnout. Organizationally, burnout is a critical issue because it may lead to diminished quality of care and high turnover. We developed the SupportNet intervention (website and professional coaching) to reduce job burnout among military behavioral healthcare providers. SupportNet, based on the theoretical framework of social cognitive theory, utilizes web-based support system with coaching to enhance self-efficacy and social support.

Objective: This study examined the effectiveness of the SupportNet intervention in reducing job burnout among military behavioral healthcare providers in the U.S., using a randomized controlled trial (RCT).

Methods: Participants were 14 behavioral healthcare providers (78.6% female, mean age = 48.00 (SD = 10.92)) working with military personnel in the U.S. All participants completed a pre-RCT survey measuring job burnout. Participants were then randomly assigned to one of three groups: Group A (five participants) worked on the SupportNet website with the guidance of a professional coach for eight weeks. Group C (five participants) worked on the website without coaching. Group B served as a delayed treatment control group.

At the completion of the RCT, participants in Groups A and C completed a post-RCT job burnout measure. Approximately eight weeks after the initial pre-test, participants in Group B completed a second survey measuring job burnout, and began working on the website with coach guidance. Following completion of their intervention activities, Group B participants completed a post-RCT survey measuring job burnout.

Results: To compare job burnout pre- and post-RCT among the three groups, we conducted a 2 (time: pre-RCT vs. post-RCT) by 3 (group) mixed model analysis of variance. For Group B (delayed treatment), job burnout scores from the two pre-RCT measurements were used as a control condition.

Results showed no significant main effect for time, $F(1, 11) = 2.35$, $p = .15$, partial eta-squared = .18. The main effect calculated for group was also not significant, $F(2, 11) = 0.35$, $p = .71$, partial eta-squared = .06. However, the interaction effect of group and time was significant, $F(2, 11) = 6.97$, $p = 0.1$, partial eta-squared = .56. A Scheffe's planned follow-up comparison indicated job burnout significantly decreased from pre- to post-RCT in group A, $t(13) = 3.99$, $p < .01$, $d = 1.54$, although groups B and C did not exhibit such a pre- to post-RCT difference.

Conclusion: Results indicated the SupportNet intervention, in tandem with professional coaching, was effective in reducing job burnout. Coaching seems to be an important catalyst encouraging participants to engage in the website, and serving as a measure of accountability for doing so. However, this effect limited to the immediate treatment group. We will explore the implications of this pattern of results.

Appendix XII: Poster Abstract: SupportNet for military behavioral healthcare providers: Website engagement and job burnout.

Purpose. SupportNet intervention, based on the theoretical framework of social cognitive theory, utilizes web-based support system with coaching to reduce job burnout among military behavioral healthcare providers. This study examined how engagement in the website affects reduction of job burnout in a randomized controlled trial (RCT).

Methods. Participants were 14 military behavioral healthcare providers (80.0% female, mean age = 48.67) in the U.S. They completed a pre-RCT survey measuring job burnout. Participants were randomly assigned to one of three groups: Group A worked on the website with coaching for eight weeks; Group B served as a delayed treatment; Group C worked on the website without coaching. At the completion of the RCT, participants completed a set of questionnaires assessing job burnout and engagement variables (i.e., website usage, hours spent on the SupportNet website, frequency of using the website).

Results. A supervariable, "engagement," was created using a principal axis factoring on the engagement variables. We, then, conducted a repeated ANOVA with pre- and post-RCT job burnout as within-subjects variables and engagement as a covariate. Results showed a significant interaction effect between job burnout and engagement, $F(1, 13) = 5.06$, $p = .04$. A follow-up test indicated that there was no significant difference between pre- and post-RCT job burnout when engagement was at one standard deviation (SD) below the mean, $t(14) = 0.11$, $p = .92$. However, the difference between pre- and post-RCT job burnout was significant when engagement was at the mean, $t(14) = 2.17$, $p = .05$, and at one SD above the mean, $t(14) = 3.13$, $p = .01$.

Conclusions. Findings indicated that job burnout decreased as engagement increased. Participants' engagement was driven by the guidance of coaching that seems to be an important catalyst encouraging participants to engage in the website.

3 learning objectives.
"The participant shall be able to…"

- Reduce job burnout after the SupportNet intervention.
- Increase self-efficacy through goal setting, one of the major components of the SupportNet intervention.
- Learn about job burnout in the SupportNet intervention.

Appendix XIII: Poster abstract: The relationship between web intervention engagement and job burnout: A moderated-mediation model using technology readiness and job burnout self-efficacy.

The purpose of this study was to examine the mechanism of web engagement involving job burnout (JB) and job burnout self-efficacy (JBSE) from a social cognitive theory (SCT) framework. In SCT, self-efficacy is a key component of self-regulation when coping with life demands. We tested an indirect effect of JBSE in the relationship between JB and web intervention engagement using a moderated-mediation model. We used technology readiness (TR) as a moderator in this analysis. A sample of 79 military mental health providers (mean age = 50.11 years old [*SD* = 12.16], 65.8% female) was assessed using measures of JB, JBSE, TR, and web intervention engagement. Results showed an indirect pathway from JB to web intervention engagement through JBSE was significant when moderated by TR. There was a significant indirect effect of BSE on the relationship between JB and engagement for individuals with high levels of TR (Bootstrapping LCI = -.034, UCI = -.003). This relationship was insignificant for individuals with low levels of TR (Bootstrapping LCI = -.008, UCI = .010). Self-regulation through perceptions of coping competence may play an important role in web intervention engagement, depending on level of perceived technological readiness. Clinical and theoretical implications will be discussed.

Appendix XIV: Poster Abstract: Effects of sexual assault history on the relationship between secondary traumatic stress, job burnout self-efficacy, and burnout for military mental health providers.

Mental health providers with a sexual assault (SA) history are at greater risk for secondary traumatic stress (STS) and job burnout (JB). Job burnout self-efficacy (JBSE) may serve as a mediating mechanism between STS and JB. These variables were examined for military mental health providers with a SA history. It was predicted that (a) STS would predict lower levels of JBSE, (b) higher levels of JBSE would predict lower levels of JB, and (c) that SA status would moderate whether JBSE mediates the relationship between STS and JB. These data come from the baseline assessment part of an on-going longitudinal study. All on-post Army mental health/behavioral health providers and select western region Tricare providers were sent an email describing the focus of the study and the study link. Participants' age ranged from 29 to 80 years old, 65% were female, and 50% had a doctorate degree. A moderated-mediation analysis found a statistically significant negative relationship between STS and JBSE, as was the relationship between JBSE and JB. SA was a statistically significant moderator of the relationship between STS and JB where JBSE was the mediator, suggesting that JBSE serves a self-regulatory role by which STS relates to JB in providers with a SA history. These providers may have unique challenges and self-regulatory processes related to STS and JB that should be explored further.

Appendix XV: Report: Process and Outcome Evaluation for SupportNet.

Process and Outcome Evaluation for SupportNet

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Executive Summary

The process and outcome evaluation of the SupportNet project demonstrates that the objectives of the program are partially being met. The SupportNet intervention aims to alleviate burnout and secondary-traumatic stress (STS) among military mental health providers, who work with returning service members or combat veterans suffering from traumatic stress through use of a website with different components (goal-setting, life-balance wheel, social networking, resource-room, self-assessment, and take-5),and SupportNet coaching sessions. The intervention was designed using Social Cognitive Theory as a framework for providing support for military behavioral health providers by promoting secondary traumatic growth and work engagement by increasing their environmental support, coping self-efficacy, and self-care behaviors.

SupportNet staff and mental health providers in the RCT participated in the program evaluation. Process and outcome evaluation data consisted of quantitative and qualitative data from both the SupportNet staff and participants, in addition to website usage tracking data for users. Data were collected from December 2012 through June 2014. The following components were measured and assessed as part of the process evaluation:

- Fidelity to treatment: SupportNet project demonstrated adequate fidelity to treatment. SupportNet outcomes were not statistically significantly different from pre- to post intervention, but the data showed trends in the hypothesized directionality for all outcomes except for work-engagement. Overall, participants partially agreed SupportNet improved their ability to cope with work stress, but were ambivalent about the intervention's role in improving their professional relationships.
- Implementation fidelity: The SupportNet intervention was shown to be implemented as planned. In the RCT phase of the project, the SupportNet staff was responsive and adaptive

to change throughout the implementation process. While, impact evaluations were unable to be conducted, video was not used as a channel for delivery, the intervention focus shifted from STS to burnout, and off-base providers were included, Social Cognitive Theory was a strong guiding force in the development and implementation of SupportNet, which was seen by many SupportNet staff as being a major strength of the project. Additionally, the staff were seen as being responsive to the process

- Dose delivered: Technical difficulties and nonuse of video modality aside, all intended SupportNet intervention components were implemented according to plan.
- Dose received: Participants who engaged the most with the intervention and received coaching (M = 69.50, SD = 7.29) showed higher satisfaction with the intervention. Twenty-one participants (35%) actually logged onto the website for 20 minutes or longer. 15 (25%) participants completed the post-intervention outcome measures, 11 (28%) participated in the SupportNet coaching protocol. Participants cited the usefulness of the life-balance wheel and the goal-setting modules, and enhanced self-care as being the usefulness of the website.
- Reach and recruitment: A convenience sample was recruited through cold calls made to military mental health providers nationally and through research solicitations posted on professional *Listservs*. The pre-intervention response rate was lower than expected; however, 60 participants were included in the RCT, as planned due to burnout cut-off scores (≥ 2) being adjusted to include the minimum number of participants in the RCT and thus, it was unclear whether those who were included were actually in risk of burnout and a part of the SupportNet intervention's target population.
- Context: The project was challenged by the task of recruiting providers who were at risk of burnout to participate in an intervention that required a time commitment. It is possible that

participants did not engage with the SupportNet intervention as a function of their level of burnout. Lack of military support was cited by staff as being a barrier to the project that likely affected recruitment. Finally, the time of recruitment for the RCT coincided with the 2-week government shutdown in October 2013, which resulted in government employees being furloughed. Since the project itself was funded by the Department of Defense, the project was likely affected through contract delays and limited ability to recruit providers working for the military.

As noted above, outcomes did not show statistically significant differences from pre- and post-intervention; however all outcomes, except for work engagement, trended in their expected directions with Cohen's *d* effect sizes ranging from medium to large. Outcomes were likely affected by the small sample size at post-intervention, in addition to the low inclusionary cut-off for the burnout measure. While outcomes of the SupportNet project did not garner the effects expected these initial results highlight the potential efficacy of the intervention in the future.

Process and Outcome Evaluation for SupportNet

The SupportNet intervention aimed to assist mental healthcare providers in reducing potential job burnout and secondary traumatic stress (STS) through improved social support and self-efficacy is nearing its implementation phase. As required by the granting agency, an independent external program evaluation was required. The process evaluation of the SupportNet project was primarily for summative purposes, but it may also serve formative purposes in future replication of the intervention.

Process evaluations are typically used to determine the extent to which the intervention is being delivered and implemented according to the stipulations enumerated in the program proposal. During the development and implementation stages of the program, process evaluators uses a systematic measurement to assess how well the program is meeting its specified goals, the extent to which the program is reaching the intended target group, and how satisfied participants are with the program. In addition, process evaluation results may be used to make changes in the delivery or content of the implementation to improve the intervention(s). The following section briefly reviews the SupportNet project, its ideal implementation, and then outlines the specific questions answered and methods to that were employed in that evaluation. Change scores on the described measurement methods constituted the outcome evaluation component.

SupportNet Project

The SupportNet project attempts to provide an integrated approach to helping prevent and treat job burnout and STS among military mental health care providers. From a social-cognitive theory perspective (Bandura, 1997), the proposed website and integrated treatment would enhance the perceived social environmental support, enhance coping self-efficacy to handle

work-related stress, and facilitate the setting and mastering of goals (both professional and personal).

Effectiveness of the intervention was to be demonstrated by reducing participants' scores on measures of job burnout and STS and increasing positive outcomes, including work engagement and coping self-efficacy. Through the use of randomized clinical trials (RCTs), the project developers intended to demonstrate the effectiveness of the intervention on these key outcome variables after utilizing the website for a specified time period (eight weeks).

The primary stakeholder groups include the SupportNet researchers and staff as well as the participants in the RCTs. The secondary stakeholders include the U.S. Army Behavioral Health Department associated with Evans Army Community Hospital, Fort Carson, the Department of Defense, military clients, spouses and colleagues of primary stakeholders. Although an impact evaluation was not performed on these stakeholder groups.

Complete and Acceptable Program Delivery

The ideally implemented SupportNet program was expected to utilize all components of the intervention, including the online components (e.g., social networking platform, self-assessment, etc.) and getting personalized coaching for two of the three groups in the RCT from a designated SupportNet behavioral health clinician. The website was to deliver the majority of the components via modules available from the home page. The modules included: Self-Assessment, Goal Setting, Life-Balance Wheel, Take 5, and Library/Resource Room (psychoeducation). Through the Social networking platform, providers had the ability to locate social support from designated mentors and coaches. Mentors refer to other system users (providers) who have identified themselves as having a specialized expertise in a given area and were willing to provide mentorship to other system users. Mentors were identified as being

individuals who showed high work engagement and low risk for burnout in their pre-intervention test scores. Coaches refer to a SupportNet behavioral health clinician who provided coaching services to system users. The social networking platform, website modules, and coaching are discussed in more detail below.

Social Networking platform. A major overarching component of the SupportNet website was the social support it provides. Social support from personal and professional mentors was accomplished via the social networking platform. Individuals had the opportunity to seek out mentors related to areas of interest and professional problems they are facing. All participants were asked to indicate areas of expertise, so they may function as mentors to other providers. The social networking platform was to provide an engaging, rich, helpful experience for its users and increase providers' perceived social support.

Goal Setting and Life Balance. Goal setting is another important component of the intervention that should function to increase participants' self-efficacy through mastery experiences. Based on the self-assessment and consultation with a designated coach, providers were to create their own professional and/or personal goals, share them with their social network (if desired), track progress, and specify rewards for goal completion.

A life balance wheel allowed providers to identify and assess values and key areas of their lives and functioned to guide goal setting in various life domains. The domains of the life balance wheel included Home/Physical Environment, Health & Fitness, Learning & Growth, Career/Work, Money/Finance, Family/Friend/Partner/Love Relationships, Fun, and Spirituality. For each domain, providers rated their current level of satisfaction and their desired level of satisfaction. They were also able to set goals to improve in areas in which they desire more satisfaction.

Self-Assessment. The assessment module should allow providers to complete self-report questionnaires that provide a reliable and valid measure of their behavior or functioning in the following areas: social support, burnout, coping self-efficacy, secondary traumatic stress, perceived stress, and work engagement. The providers received immediate feedback as to their scores and were able to track their scores over time if they completed the measures repeatedly. Feedback was provided based on their scores, and directed providers to other modules of the website that may be appropriate for their specific needs.

Resource Room. Psychoeducation should supplement the interactive activities by contributing to participants' knowledge of a variety of relevant topics, including STS, secondary traumatic growth, job burnout, work engagement, social support, self-efficacy, self-care, well-being, and work/life balance. The SupportNet resource room content provided a resource for providers to learn more information about relevant topics to increase their awareness of issues such as burnout and STS as well help facilitate accomplishing their goals. The resource room also was to provide information about evidence-based treatments to improve clinical skills. The content was provided by the SupportNet team and was ideally expected to be updated to stay current with research and publications.

Coaching. Each provider was assigned a coach to assist in the setting and achieving of personal goals. Ideally, each provider in Trial Groups A and B was expected to utilize and benefit from the six sessions with their designated SupportNet behavioral health clinician. Potential modalities of communication between providers and coaches included speaking on the telephone. If needed, referrals for personal therapy in some instances were planned to be offered to providers. Personal therapy was to be provided by a referred party, not a SupportNet staff member; however, this did not occur during the RCT.

Process Evaluation Questions and Methods

Steckler and Linnan (2002) specified seven components to be measured and evaluated in process evaluations of public health interventions, including context, reach, recruitment, dose delivered, dose received, fidelity to treatment, and implementation. Based on the recommendations of Saunders, Evans, and Joshi (2005), the process evaluation plan included the following components: implementation fidelity, dose delivered, dose received, recruitment, reach, and context. Each of these components is detailed below.

Fidelity. The implementation of the intervention reflects the extent to which the intervention has been applied and received by the target population. The fidelity refers to what constitutes high quality implementation (Saunders et al. 2005). Fidelity means the extent to which the intervention was delivered as intended, and represents a measure of quality and integrity of the intervention as planned by its developers (Steckler & Linnan, 2002). The SupportNet intervention utilized social cognitive theory as a framework for providing benefits to primary caregivers within the military. As outlined in its proposal, SupportNet should reduce burnout and secondary traumatic stress and promote secondary traumatic growth and work engagement by improving environmental support, coping self-efficacy, and self-care behaviors and skills. From a social-cognitive perspective, the fidelity of the SupportNet project is defined as the extent to which the intervention improved mental health care providers' perceived efficacy to cope with the demands of their jobs and utilize personal and professional resources effectively. To measure this, participants were asked to what extent the intervention succeeds in improving work engagement, coping self-efficacy, and self-care behaviors. Additionally, SupportNet staff was asked via self-report questionnaire delivered via email regarding their perceptions of how the SupportNet project was reaching its intended goals.

Adherence measures the extent to which participants followed the intervention as intended. Adherence is of particular concern for web-based intervention research, for attrition can undermine the statistical power of the results and the generalizability of the study. Quantitative measures of adherence include number of logins, completed modules or activities, visits and posts to forums, and self-reported completion of activities in daily life away from the program (Donkin, et al., 2011). In their review of e-therapies, Donkin et al., concluded that module completion was most consistently related to outcomes in psychological health interventions, and number of logins was most related to outcomes in physical health interventions. Tracking participant usage of the site was a crucial component in the development and ongoing process evaluation of this web-based intervention. Implementation fidelity was measured by the following process evaluation questions:

1. ***To what extent was the intervention implemented as planned?***

   Measured by: SupportNet staff report and process evaluation; participant self-report questionnaire

2. ***To what extent was the intervention implemented consistently with the underlying theory?***

   Measured by: SupportNet staff report and process evaluation

Dose delivered. The dose delivered refers to the amount of intended units of the intervention provided to participants. Measuring dose delivered of an intervention was accomplished by answering the following question:

3. ***To what extent were all of the intended components of the SupportNet intervention implemented?***

   Measured by: Usage tracking data; participant self-report questionnaire

Each participant's number of logins, total amount of time spent on the site, module completion, and time spent engaged with each component all function as quantitative indicators of meeting this objective. Various multimedia channels were utilized in delivery of the internet component of the intervention to enhance user engagement. SupportNet proposed several delivery modalities to be used, including but not limited to: audio, video, email correspondence and support, and discussion threads. Dose delivered means the amount of intended units of the intervention provided to participants, whereas the dose received refers to the amount of units of the intervention participants were actually exposed to.

Dose received. Related to participant engagement in the program, dose received reflects the extent to which participants used modules, resources, or techniques recommended by the program (Murta, Sanderson & Oldenburg, 2007). The dose received represents the extent to which participants actively engaged in the intervention and interacted with the delivered intervention components. Dose received can be conceptualized as containing elements of both exposure and satisfaction (Saunders et al., 2005).

Interactivity in an online intervention includes providing feedback and tailoring content to individual users, active participation as opposed to passive user behavior, increases user control and involvement in decision making, and real-time responsiveness (synchronicity). The degree of synchronicity refers to the timing and responsiveness in communication, feedback and support from professional clinicians, other users, or from the program itself (Proudfoot et al., 2011). Synchronous communication is immediate, such as real-time chat via Skype or some similar programs. Asynchronous communication is delayed, such as email responses and blogs or forums. In the SupportNet intervention, the use of email and posting on the social network represent asynchronous communication. Feedback on self-assessments was considered

synchronous. Consistent with researchers' recommendation for interactivity (Proudfoot et al., 2011), SupportNet offered modules with interactive elements, such as self-assessment, goal setting, life-balance wheel, tailored feedback and the resource room.

4. To what extent were participants satisfied with the intervention received?

Measured by: Participant self-report questionnaire and qualitative report

5. To what extent did participants use the various components of the SupportNet intervention?

Measured by: Participant self-report questionnaire and usage tracking data

6. Did the participants find the intervention components useful?

Measured by: Participant self-report questionnaire and qualitative report

Reach and Recruitment. Reach refers to the proportion of the target population that participates in the intervention. The target population should be defined in terms of demographic factors, symptoms or problem area, psychological indices (e.g., self-efficacy, motivation, and locus of control), and technological considerations (e.g., computer ability) (Proudfoot et al., 2011). Reach can be determined by registering the number of invitations sent and the characteristics of the participants. Reach also refers to the accessibility of the intervention; the way by which participants accessed the intervention must be clearly defined as well as eligibility and exclusion criteria (Proudfoot et al., 2011). An additional consideration for internet interventions is readiness for mass dissemination, including information about the capacity for the program to be released on a larger scale and reach a wider audience (Proudfoot et al., 2011). A primary objective in the outcome evaluation is to provide recommendations for potential replication to other military posts. Relatedly, recruitment refers to procedures used to attract participants, and it can occur at the individual and organizational level.

7. ***Was the intervention delivered to the minimum number of participants?***

Measured by: Demographic information; usage tracking data

8. ***What procedures were followed to recruit participants?***

Measured by: SupportNet staff report and process evaluation

Context. Context refers to aspects of the larger social, political, and economic environment that may have influenced implementation of the intervention (Steckler & Linnan, 2002). Regarding the SupportNet project, the larger context of the military culture in general and Fort Carson specifically, was considered. Data sources for context included SupportNet staff, participants, and key informants from Fort Carson and Evans Army Community Hospital.

Method

Participants/Stakeholders

The primary stakeholders included the SupportNet researchers and staff as well as the participants in the RCT. The secondary stakeholders included Evans Army Community Hospital, Fort Carson, the Department of Defense, military clients, spouses and colleagues of primary stakeholders.

Measures

SupportNet Staff Report. The project developers, researchers, and other staff members who contributed to the development and implementation of the SupportNet project were asked questions that relate to answering the process evaluation questions outlined above. This brief questionnaire contained both quantitative and qualitative measures of each individual's role in the project, perceived barriers to ideal project implementation, and confidence in the project reaching its goals (see Appendix A). The quantitative portion consisted of seven items that were measured with a 6-point Likert-type scale (1 = *Strongly Disagree* to 6 = *Strongly Agree*). Additionally, a more in-depth open-ended questionnaire functioned to obtain more detailed,

qualitative data related to the SupportNet project development, implementation, and its progress in reaching its goals. Staff members were asked about perceived obstacles to ideal implementation of the project so that potential barriers may be addressed. This self-report from the staff was specifically useful in informing questions 1, 2, and 8 specified above in the process evaluation questions and methods section (See Table 1 below).

Participant Report/Online Questionnaire. A comprehensive questionnaire was given to all participants after the intervention. Part of this comprehensive questionnaire was developed by the SupportNet team, and it measures responses to specific aspects of the intervention. These items measure knowledge and skills gained and perceived behavioral changes. Additionally, the program evaluation team added to this comprehensive questionnaire, the SupportNet Satisfaction Inventory (SSI), which included items that assessed overall program satisfaction (see Appendix D). Participants' attitudes toward the quality and content of the intervention as a whole were assessed in this longer, more in-depth questionnaire. Questions were answered by a 7-point scale ranging from (1 = *Strongly Disagree* to 7 = *Strongly Agree*). Lastly, the online questionnaire also provided the opportunity for participants to offer additional feedback in their own words. Participants were asked to provide suggestions and comments on the program as a whole as well as for specific components of the intervention.

Participant Feedback on Website. Participants had the opportunity to choose to give feedback when interacting with the website. Participants could choose to give feedback specific to different components of the website (e.g., resource room, goal setting, etc.), or provide general feedback for the website as a whole. There was space given for qualitative prose if the participant wished to add comments or suggestions related to the program. The feedback section

was made accessible for participants to choose to opt-in to fill out, but was not be a required part of the intervention.

Usage Tracking Data. The prescribed and actual frequency of use of the site and the modules within it should be tracked (Proudfoot et al., 2011). Key indicators for the process evaluation included: (1) Number of logins, (2) Total amount of time spent on website, (3) Number of components (modules) accessed, (4) Time spent on each component, (5) Traffic, and (6) Attrition. Regarding attrition, demographic information was obtained from those participants who drop out so systematic attrition could be ruled out or verified.

Demographic Information. Demographic information was obtained from all participants to assess the extent to which the sample represented the target population of interest and to determine the generalizability of the findings. Furthermore, demographic information informed the researchers of the readiness of the site for replication to other military posts. The demographic information was obtained from all participants as part of the intervention, in which case there was not a need to reassess for demographic information as part of the process evaluation. Key demographic factors that were obtained include age, gender, education level, current position (credentials), years of experience in their field, and trauma training (yes/no). Additional factors of interest included personal experience with trauma and military status.

Procedure and Design

The first SupportNet staff report and process evaluation questionnaire was emailed to the individual SupportNet staff members in December, 2012. The second SupportNet staff report and process evaluation questionnaire was sent out a second time in September, 2013.

A delayed treatment paradigm was used to deliver the SupportNet intervention to three experimental groups of participants. In this way, the initial control group of participants became

the experimental group in the second trial. For each trial of the intervention, the participants in the experimental group received the online comprehensive questionnaire at specified time periods. The timing of data collection was proposed to occur at three time periods for each experimental group. The first occurred prior to starting the intervention. The second was delivered to participants at the termination of the intervention, and this was considered part of the outcome evaluation. Lastly, the participants were given the questionnaire at two-month follow-up after intervention completion; however, results of the two-month follow-up were not incorporated into the current evaluation.

Outcome evaluation

Outcome evaluation involved use of statistical methods to determine treatment effectiveness on the target group. Quantitative outcome measures taken after the intervention allowed the current researchers to assess the extent to which the stakeholders change over time, presumably as a result of the intervention. In the SupportNet outcome evaluation, it was important to consider the design of the study, including a control group for comparison, random assignment, pre and post-tests, and adequate sample size. Attrition is a common problem with online interventions, so it was crucial to anticipate attrition when determining sample size and to maintain frequent contact with participants to keep them engaged (Chiu & Eysenback, 2010). Outcome measures assessed whether target goals have been achieved. Measures of STS and job burnout are discussed in the SupportNet proposal. Additionally, positive outcome measures are included, such as work engagement and coping self-efficacy.

Effectiveness

In assessing effectiveness, researchers were expected to report routine outcome measurements, participants' adherence to the intervention, and information about the generalizability of

intervention's effectiveness in a real world context (Proudfoot et al., 2011). Indices of an intervention's effectiveness include improvements in users' symptoms, behavior, functioning and quality of life (Proudfoot). As outlined in the proposal, the participants were measured on job burnout, STS, work engagement, coping self-efficacy, perceived stress, and perceived social support. In addition to these quantitative measures of effectiveness, qualitative methods may be necessary to enrich the information provided by the quantitative analyses. Proudfoot et al. urge researchers to recognize additional complexities including participant preferences, selection biases, differential dropout rates, and the appropriate use of quantitative and qualitative methods.

Satisfaction

Participants' satisfaction with various components and with the intervention as a whole was assessed via the online questionnaire described in the method section. This questionnaire was delivered after completion of the intervention as part of the outcome evaluation. In addition to Likert-type questions assessing satisfaction with the program, there were open-ended questions and space provided for participants to provide additional feedback. This qualitative information was to supplement the satisfaction ratings and provide more detailed feedback.

Results & Discussion

The results of the process and outcome evaluation for the SupportNet project were conducted by use of quantitative and qualitative methods. Frequencies and descriptive statistics (mean, standard deviation, and range) were provided for the SupportNet staff process evaluation questionnaire, the SupportNet Satisfaction Inventory (SSI), each outcome measure, as well as metrics on SupportNet website usage and coaching.

Internal Process Evaluation

Two internal process evaluations with the SupportNet staff were conducted within a year's time. The first evaluation was conducted in December 2012 and qualitative and quantitative responses were received from four (57%) team members (see Appendix B). The second evaluation was conducted after the start of the SupportNet RCT in September 2013. The subsequent evaluation garnered quantitative responses from 10 (90.1%) team members. One team member did not fill out the open-ended responses form; therefore, qualitative responses were collected from nine members (81.81%) of the SupportNet staff (see Appendix C).

Descriptive statistics of items on the internal process evaluation questionnaire from Time 1 and Time 2 are depicted on Table 1 below. Agreement with responses increased from the first to second evaluation for all items except for item numbers 2, 5, and 9. There was less than a .2 decrease in agreement for items number 5 and 9. The largest decrease in agreement was shown for number 2 (Time 1: $M = 5.2$, $SD = 1.3$; Time 2: $M = 4.89$, $SD = 1.27$), indicating that team members did not have as high agreement regarding being provided the proper resources to carry out their respective jobs. It should be noted that even the largest decrease in agreement was less than a .5 mean difference, and that this decrease may be reflective of the fact that the response rate for the second evaluation was double the amount of the first evaluation.

Table 1
Descriptive Statistics for SupportNet internal process evaluation questionnaire.

Question	*M*		*SD*		Range	
	T1	T2	T1	T2	T1	T2
1. The SupportNet project will reach its goals.	5.4	5.67	.55	.5	1	1
2. I have been given the proper resources to complete my tasks on the project.	5.2	4.89	1.3	1.27	3	3
3. I believe everyone knows his/her own specific duties who work on the project.	4.8	5.44	1.79	.53	4	1
4. Everyone is accomplishing their duties who work on the SupportNet project.	5	5.67	1.73	.5	4	1
5. I am accomplishing my responsibilities	5.8	5.78	.45	.44	1	1

pertaining to the SupportNet project.						
6. I have encountered few barriers in reference to the SupportNet project.	3.4	3.67	1.34	1.41	3	4
7. I believe that my roles on the SupportNet project are important.	5.6	5.67	.55	.71	1	2
8. I believe that I am responsive to suggestions from other team members.	5.4	5.56	.89	.73	2	2
9. I listen to input from my superiors and my peers.	5.8	5.67	.45	.5	1	1
10. I believe that my input is valuable.	5.25	5.67	.83	.5	2	1

*Note.*T1 = Time 1, T2 = Time 2. All mean scores are based on a 6-point Likert-type scale with higher numbers indicating greater agreement (1= *Strongly Disagree* to 6 = *Strongly Agree*).

A long-table approach (Krueger & Casey, 2000) was employed for analyzing the qualitative open-ended process evaluation responses, which entailed taking each qualitative response for every individual and then comparing respective items, side-by-side, to analyze similarities and extract themes. Results from both evaluations illustrated that team members appeared to be in agreement of the over-arching goals of the SupportNet project; however, in the second process evaluation, team members also cited goals that seemed consistent with their respective roles on the project (i.e., "development of an intervention for burnout and STS" for member of the SupportNet intervention development group). Regardless of the varied responses regarding project goals, responses illustrated the presence of strong group self-efficacy and an increase in team cohesion, despite different teams from different areas of expertise. SupportNet team members were in full-agreement of the primary group to be affected or impacted by the outcome of the SupportNet project. Team members were unanimous in their belief that the SupportNet project would reach its goals, with a majority of respondents citing comments related to the quality of team as being a reason for their confidence in both Time 1 and Time 2.

Recommended improvements to the SupportNet project in the first evaluation by staff members included comments regarding the need for improved communication amongst team members, which was not a theme present during the second evaluation. Instead, the majority of

team members cited the need for more resources to better the intervention, such as time (n = 2), money (n = 3), and technology (n = 2).

The majority of challenges cited were consistent across both evaluations, with barriers related to the lack of military support and changes as a result of the project development process being prevalent. Another barrier mentioned during the second evaluation was the lack of resources provided, such as time constraints being an obstacle encountered while working on the project.

SupportNet Participant Characteristics

Military mental health providers randomized into the SupportNet RCT were aged 29-80 (M = 49.43, SD = 12.38). For military status, 18 providers indicated being active duty (30%), one affirmed being in the reserves or national guard (1.7%), eight indicated being retired or former military (13.3%), 32 stated having no military service (53.3%), and one provider did not provide their military status. Forty-two providers were female (70%), and 18 were male (30%). Highest education attainment differed across providers, with 16 (26.7%) providers having a master's degree, 14 (23.3%) having post-master's educational work, and 30 (50%) having a doctorate or professional degree. Forty-seven providers (78.3%) indicated being in a committed relationship (i.e., are married, or have a domestic partner), 13 providers (21.7%) indicated being single. The sample of providers included 13 clinical psychologists (21.7%), 17 counselors or psychotherapists (28.3%), three marriage and family therapists (5%), four medical doctors (6.7%), four psychiatrists (6.7%), one physician assistant (1.7%) and 9 social workers (15%). Nine providers (15%) did not report their primary professional role.

SupportNet Process Evaluation

In the RCT phase of the project, the SupportNet staff was responsive and adaptive to change the focus of the intervention as a function of the results of the prevalence study measuring burnout and STS, as well as the instrument scores received from the pre-intervention comprehensive questionnaire. Additionally, the scope of participants was expanded to include off-post providers.

Descriptive statistics for the SupportNet website usage tracking and effect sizes are depicted on Table 2. Results of an independent samples t-test found a statistically significant difference between all usage measures for participants who were coached and un-coached. Participants who received coaching showed significantly higher usage metrics overall.

Table 2
Usage Descriptive Statistic and Cohen's *d* for Coached (*n* = 11) and Un-Coached (*n* = 10) Participants

Usage	*M*	*SD*	Min	Max	Cohen's *d*
Number of Logins**	10.62	7.23	2	25	.20
Coaching	16.73	3.82	11	25	
No Coaching	3.9	2.02	2	9	
Duration of Usage**	5712.75	9746.76	187.81	30487.81	1.26
Coaching	10626.70	11578.29	251.70	30487.81	
No Coaching	307.42	424.9	22.46	935.07	
Number of Pages Visited**	187.81	147.38	29	562	2.26
Coaching	291.64	132.86	143	562	
No Coaching	73.6	31.4	29	139	

Note. ** denotes statistical significant difference between groups at $p < .01$ level.

A proportion of participants in the RCT of SupportNet completed the SupportNet Satisfaction Inventory (SSI), which was included with the post-intervention outcome measures. Fourteen participants completed the SSI. A reliability analysis conducted on the scale garnered a Cronbach's alpha of .93, indicating strong internal consistency among the items. Total SSI scores could range from 12 to 84. The minimum total SSI score was 23 and the maximum was 75. Individual and total descriptive statistics for items on the SSI are illustrated on Table 3.

Table 3
SupportNet Satisfaction Inventory Descriptive Statistics (n = 14)

Question	*M*	*SD*	Min	Max
1. Overall, I felt satisfied with the SupportNet system.	5.00	1.41	2.00	7.00
2. The SupportNet system met my expectations.	4.71	1.90	1.00	7.00
3. I found the SupportNet system easy to use.	5.07	1.82	1.00	7.00
4. Overall, I found the site engaging.	5.07	1.27	2.00	7.00
5. The SupportNet system helped me to build or improve my professional relationships.	3.57	1.60	1.00	7.00
6. The SupportNet system required too much of my time.*	3.79	1.53	1.00	7.00
7. Using the SupportNet system improved my confidence in my ability to cope with work stress.	4.43	1.28	2.00	7.00
8. I felt the coach understood me.	5.21	2.78	1.00	7.00
9. I felt the coach and I had a respectful relationship.	5.29	2.81	1.00	7.00
10. The coach and I worked on what I wanted to work on.	5.29	2.81	1.00	7.00
11. I felt the coach and I had a good connection.	4.86	2.98	1.00	7.00
12. Overall, the coaching was helpful.	4.79	2.94	1.00	7.00
Total Scale Score	56.86	21.66	23.00	75.00

Note. All mean scores are based on a 7-point Likert-type scale with higher numbers indicating greater agreement (1= *Strongly Disagree* to 7 = *Strongly Agree*)

Individual item statistics indicated neither agreement nor disagreement (n = 4) to somewhat agreement (n = 5) for the majority of items. The items with the lowest means were item number 5 and 6, which indicated participants generally somewhat disagreed that the SupportNet website improved their professional relationships and required too much of their time. The three items with highest agreement were related to coaching, which is particularly notable, because the sample included four participants that did not receive coaching and subsequently expressed disagreement with the coaching statements.

Seven participants, out of the 14 who filled out the post-intervention comprehensive questionnaire provided responses to the open-ended questions attached at the end of the SSI (see Appendix E). When inquired about the ways SupportNet website was useful, the usability of the website, enhanced self-care, resources, and coaching were prevalent themes extracted from responses. One participant remarked that the intervention was “easy to use,” and another

mentioned that while they did not need to use the resources provided by the intervention, they found the "therauetioic (sic) alliance" between them and the coach as the "number one thing" they found useful. In regards to enhanced self-care, one participant remarked that "the site was very useful in motivating" them to work towards "a better life balance."

Four providers provided suggestions for how the SupportNet website could be improved. Themes for responses included the following: usability, addressing technical issues, and resources/content. In regards to usability, one participant remarked that they were unable to "figure out how to use it (the website), how to network" and they mentioned being unsure whether they were to be contacted by a SupportNet coach. It should be mentioned that this participant was in the treatment-control group, or Trial Group C, so they did not receive access to coaching. Another participant cited the technical issues they encountered while using the site and specifically mentioned how they were unable to "successfully printout from various computers the life balance wheel" and "had to reenter data several times on the life balance wheel, as it (data) was somehow lost, after saving it." In regards to resources and content, one participant stated their lack of need for the resources and content provided by the SupportNet website, whereas another participant voiced their initial excitement with the possibility of accessing articles and resources in the resource room, but then cited their disappointment with being unable to access entire articles, as they were hoping to "reference the tools…being utilized."

Responses to what ways coaching was helpful were largely positive. Themes extracted from responses included support, listening/human interaction, helpfulness for goal attainment and coaching as being informative. The listening and human interaction component was the most cited among participants (n = 3). One provider stated there was "no substitute for accurate empathic listening" and another participant mentioned how they "enjoyed talking" with their

coach. In regards to coaching being informational, one participant cited "the coaching was outstanding" a described learning "a lot" from their SupportNet coach. In relation to the themes of goal attainment and support, one provider cited that their coach "was very supportive, helpful, and motivational in assisting" them "toward achieving the goals" they set for themselves. Another provider stated that their coach "checking in each week was helpful" in keeping them working toward their goal. Also worth mentioning is that no participants provided any suggestions for how coaching could be improved.

When asked about what important things were missing from the SupportNet website, participants mentioned an improved contact area, articles and actual resources that could be applied on their own. When asked about the part of the website they found most helpful, participants varied in their responses (See Appendix E). Only four components were referenced in responses. The greatest agreement was shown for the life-balance wheel (n = 4), followed by the goal-setting component (n = 2). Both the resource room (n = 1) and self-assessment (n = 1) were also modules mentioned as being the most helpful part of the website. Responses to what about the website was disliked by participants reiterated themes from the question regarding improvements, with technical issues and usability, or intuitiveness of the website design being prevalent themes. One participant mentioned their dislike of "computers in general," citing their lack of interest in using a computer to access the intervention at home after being on a computer all day for work. Another participant stated disliking the "social support area" or networking component, stating they were uninterested in the component due to its similarity to *Facebook*.

Supplemental quantitative items assessing participants' perceptions of SupportNet modules and website were included. Descriptive statistics were produced for each of these items (see Appendix F).

SupportNet Outcome Evaluation

Correlational analyses were used to illustrate associations between pre-intervention SupportNet outcome measures. Results are displayed on Table 4.

Table 4
Pre-Intervention Outcome Measure Correlation Matrix (n = 60)

	1	2	3	4	*5*	6
1. OLBI	–	-.32**	.72**	-.79**	-.59**	-.38**
2. WSBSE		–	-.44**	.29*	.43**	.05
3. STSS			–	-.47**	-.70**	-.23*
4. STSES				–	.52**	.35**
5. UWES					–	.27*
6. Readiness						–

Note: OLBI = Oldenburg Burnout Inventory, WSBSE = Work Stress Burnout Management Self-Efficacy, STSS = Secondary Traumatic Stress Scale, STSES = Secondary Trauma Self-Efficacy Scale, UWES = Utrecht Work Engagement Scale. ** indicates $p < .01$. * indicates $p < .05$.

Results of the correlational analyses for the pre-intervention outcome measures illustrated significant correlations between burnout, STS, self-efficacy, and work engagement that were consistent with the theoretical objectives of the SupportNet intervention. Subsequent correlational analyses were conducted with the same measures post-intervention. Results of this analysis are shown on Table 5. These results indicated that the positive association between burnout and STS, as well as the inverse association between burnout and work engagement remained significant post-intervention, but no significant associations were found for burnout and WSBSE, and STS and STSE, which were results contrary to the theoretical objectives of the SupportNet. While results were not significant, it is important to note that the sample size in the subsequent correlational analysis was remarkably smaller ($n = 14$) than the pre-intervention analysis sample ($n = 60$) and thus, statistical power for the second correlational analysis may have been inhibited.

Table 5
SupportNet Post-Intervention Outcome Measure Correlation Matrix (n = 14)

	1	2	3	4	*5*	6
1. OLBI	–	-.19	.71**	-.25	-.61*	-.10
2. WSBSE		–	.18	.86**	.07	.26
3. STSS			–	-.01	-.30	-.16
4. STSES				–	.08	.18
5. UWES					–	.12
6. Readiness						–

Note: ** indicates $p < .01$. * indicates $p < .05$.

In order to highlight relationships between post-intervention SupportNet outcomes, usage tracking measures, and exposure to coaching, another correlational analysis was conducted. The results of the analysis are illustrated on Table 6.

The correlational analysis showed a strong association between SSI scores, number of SupportNet pages accessed, number of logins to the SupportNet website, and coaching. This finding illustrated use of the SupportNet website and exposure to coaching was positively associated with satisfaction, meaning those who used the intervention more, were likely to show higher satisfaction with the intervention. Additionally, a strong inverse correlation was found between burnout scores, logins, and coaching.

Table 6
SupportNet Post-Intervention Outcome Measure Correlation Matrix (n = 11)

	1	2	3	4	*5*	6	7	8	9	10
1. OLBI	–	-.04	.71*	-.06	-.65*	-.55	-.55	-.64*	-.47	-.68*
2. WSBSE		–	.43	.79**	.14	.34	-.20	-.04	-.56	.21
3. STSS			–	.25	-.25	-.21	-.43	-.45	-.42	-.35
4. STSES				–	.21	.03	-.29	-.21	-.62*	-.10
5. UWES					–	.31	.05	.25	.45	.50
6. SSI						–	.66*	.88**	.21	.95**
7. # Pages							–	.91**	.52	.61*
8. # Logins								–	.48	.86**
9. # Mins									–	.43

Note: SSI = SupportNet Satisfaction Inventory, # Page = Number of SupportNet Pages Visited, # Logins = Number of Logins to the SupportNet website, # Mins = Number of minutes logged onto SupportNet website. ** indicates $p < .01$. * indicates $p < .05$.

As part of the outcome evaluation, paired sample t-tests were conducted on outcome measures to determine whether there were statistically significant differences seen from pre- to post-intervention. Results of the analysis with effect size are displayed on Table 7 below. Results illustrated no statistically significant differences between pre- and post-intervention outcomes; however, because the small sample size, observations of the means were deemed more appropriate in determining whether there were changes seen from before and after use of the intervention. There was a general decrease observed from pre- to post-intervention in means for burnout scores and STS, as well as an increase in WSBSE, STSES and eHealth readiness. Aside from the increase seen in eHealth readiness, all of these trends were consistent with the outcome objectives set forth by the SupportNet team. The only measure that did not display any change was work engagement, which showed a mean decrease of .13.

Table 7
Paired Sample t-tests and Descriptive Statistics for Intervention Outcome Measures

Usage	*M*	*SD*	*n*	*t*	*df*	*p*	*Cohen's d*
OLBI			13	1.90	12.00	.08	.47
Pre-	41.38	8.17					
Post-	35.92	9.50					
WSBSE			15	-1.83	14.00	.09	.47
Pre-	46.53	5.76					
Post-	48.60	5.42					
STSS			14	1.56	13.00	.14	.37
Pre-	36.93	12.36					
Post-	33.00	9.47					
STSES			15	-1.54	14.00	.15	-.59
Pre-	40.87	4.17					
Post-	42.13	3.91					
UWES			15	.14	14.00	.89	.08
Pre-	36.40	3.92					

Post-	36.27	5.05					
Readiness			15	-.56	14.00	.59	.14
Pre-	30.47	6.08					
Post-	31.33	8.09					

** indicates $p < .01$. * indicates $p < .05$.

Independent sample *t*-tests were conducted comparing participants who received SupportNet coaching versus those who did not receive coaching. No statistically significant differences were observed for any outcome measures, aside from the SSI, $t\ (12) = -11.55$, $p < .001$, which indicated that participants who received coaching had significantly higher satisfaction than those who did not. Descriptive statistics and effect size for each of the post-intervention outcomes by coaching is illustrated on Table 8.

Table 8
Independent Samples t-test and Descriptive Statistics for Post Intervention Outcomes by Coaching

Usage	*M*	*SD*	Min	Max	Cohen's *d*	*n*
OLBI					-.72	
Coaching	33.67	7.05	25.00	48.00		9
No Coaching	40.60	11.61	35.00	53.00		5
WSBSE					-.21	
Coaching	48.20	5.37	41.00	55.00		10
No Coaching	49.40	6.07	40.00	53.00		5
STSS					.15	
Coaching	33.80	9.68	19.00	48.00		10
No Coaching	32.40	9.21	28.00	43.00		5
STSES					-.70	
Coaching	41.20	3.46	37.00	47.00		10
No Coaching	44.00	4.47	37.00	46.00		5
UWES					.51	
Coaching	37.10	5.36	32.00	45.00		10
No Coaching	34.60	4.39	28.00	38.00		5
SSI**					7.99	
Coaching	69.50	7.29	50.00	75.00		10
No Coaching	25.25	2.87	23.00	29.00		4

Note. ** indicates $p < .01$.

Despite the lack of statistically significant differences seen with other outcomes, observations of the means showed that those who were coached showed less burnout, as well as

higher STSES and work engagement. No remarkable differences in means were shown for STS and WSBSE; however, this *t*-test was conducted with small, uneven groups, thereby affecting the statistical power of the analysis. The following section will discuss the above stated results in relation to the evaluation questions.

Summary and Conclusions

The results presented in the previous section illustrated the data used to inform the process and outcome evaluation document. The following section will briefly summarize the results while weaving together the various pieces of data with the appropriate evaluation questions to assess the process and outcome of the SupportNet intervention.

Dose delivered. Technical difficulties aside, all intended SupportNet intervention components were implemented according to plan. While delivery methods used included telephone audio, email, and the social networking module, a video modality was not used.

Dose received. Results of the process evaluation indicated that individuals who engaged the most with the intervention and received coaching ($M = 69.50$, $SD = 7.29$) showed higher satisfaction with the intervention overall. Although satisfaction was high among those who engaged the most with the intervention, nonuse attrition for the RCT was an issue, as 60 providers were randomized into one of three trial groups and only 21 (35%) actually logged onto the website for 20 minutes or longer. Dropout attrition was also an issue, as only 15 (25%) participants completed the post-intervention comprehensive questionnaire. While SupportNet coaching sessions seemed to enhance adherence to the intervention, of the participants in Trial Groups A and B ($n = 39$) given access to coaching; only 11 actually participated in the SupportNet coaching protocol.

In regards to usefulness of the intervention, participants cited usefulness (and lack thereof) of different modules, but varied in their responses. Participants seemed to enjoy the life-balance wheel and the goal-setting modules. Overall, the theme of enhanced self-care seemed to be prevalent in regards to the usefulness of the website. Those who received coaching cited their satisfaction with the coaching protocol.

Implementation. Aside from being unable to conduct impact evaluations, use video as a channel for delivery, the shift of focus of the intervention from STS to burnout, and the inclusion of off-base providers, the SupportNet intervention was implemented as planned. In regards to the use of theory, results from the internal process evaluation indicated that the underlying theory of Social Cognitive Theory was a prominent fixture in the project objectives and the development of the intervention. Some team members specifically cited their belief that use of empirically-based theory was a major strength of the SupportNet project, while others also stated the use of theory as a reason that the project would meet its goals. Thus, the SupportNet intervention was shown to be implemented consistently with the underlying theory of Social Cognitive Theory.

Fidelity to treatment. From a Social Cognitive Theory perspective, the extent to which the intervention improved military behavioral health providers' perceived efficacy to cope with the demands of their jobs and utilize personal professional resources effectively represented the fidelity to treatment for the SupportNet project. In the end, while there was not statistically significant different burnout, WSBSE, STS, and STSE scores from pre- to post-intervention (see Table 7) there were trends in the data in the directionality hypothesized for the majority of outcomes, which was in accordance with Social Cognitive Theory. It was expected the intervention would decrease symptoms of burnout and STS, while increasing, WSBSE, and STSE. The only measure that did not show a substantial increase or decrease was work

engagement; however, descriptive statistics for work engagement by coaching exposure indicated that those who received coaching showed a higher work engagement (see Table 8).

Results of the SSI indicated that the majority of participants neither agreed nor disagreed with the statement that the SupportNet system helped to improve their professional relationships, but largely somewhat agreed with the statement that the SupportNet system improved their confidence in their ability to cope with work stress (see Table 3). Additionally, results of the SupportNet staff process evaluation questionnaire indicated that the majority of the staff agreed that the project would reach its goals (see Table 1). Taken together, these results illustrated the current project showed adequate fidelity to treatment.

Reach & Recruitment. The SupportNet intervention used a convenience sample recruited through cold calls made to military mental health providers across the nation and through research solicitations posted on professional *Listservs*. Participants were required to be mental health providers with at least one military trauma client currently on their caseload. As the SupportNet team planned, 60 participants were included in the RCT; however, the response rate for the pre-intervention comprehensive questionnaire that was used to determine eligibility for inclusion into the study was smaller than expected. As a result, the cut-off scores for burnout were adjusted by the SupportNet team in order to allow for the minimum number of people to participate in the RCT. The burnout cut-off score for inclusion was a scaled score of 2 (out of a possible 5). While 60 providers were randomized into trial groups, it is unclear whether those who were included were actually in risk of burnout and thus, a part of the SupportNet intervention's target population.

Context. Given the demographics of the target population trying to be helped, the project faced the challenge of trying to engage those who were at risk of burnout due to higher job

demands and lower resources through an intervention that required a time commitment. It is possible that participants did not engage with the SupportNet intervention as a function of their level of burnout.

Results of the internal process evaluations illustrated the barriers faced by the project as the result of weak support from military leaders. Given that behavioral health in the military is process-oriented, it is likely that lack of support from key military stakeholders was an impediment to the recruitment of behavioral health providers on base at Fort Carson.

The project team began recruitment for the SupportNet intervention and was readying the final RCT in October 2013, all of which coincided with the government shutdown that occurred from October 1st to October 16th, 2013. The shutdown resulted in government employees across the nation being furloughed for two weeks. Since the project itself was funded by the DoD, the government furlough likely affected SupportNet through contract delays and limiting recruitment of military behavioral health providers who work for the military.

Outcome evaluation. Pre-intervention outcomes correlated with each other in accordance with the project's hypotheses, as burnout was positively correlated with STS, and inversely correlated with WSBSE, STSES, and work engagement. Analyses conducted with post-intervention outcomes were likely affected by the small sample size. Fewer correlations were shown among the post-intervention outcomes, as the burnout measure was only positively correlated with STS and negatively correlated with work engagement, but showed no significant correlations with either self-efficacy outcome measure. Results of a paired sample t-test indicated no statistically significant differences were seen among the outcomes from pre- to post-intervention. However, observation of the descriptive statistics indicated that all outcomes,

except for work engagement, trended in their expected directions and calculated Cohen's *d* effect sizes ranged from medium to large for all outcomes, except for work engagement.

As noted above, outcomes were likely affected by the small sample size at post-intervention, in addition to the low inclusionary cut-off for the burnout measure. While outcomes of the SupportNet project did not garner the effects expected, these initial results highlight the potential efficacy of the intervention in the future.

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Appendix A

SupportNet Staff Process Evaluation Questionnaire

Please indicate your response by highlighting one of the choices below each question.

1. The SupportNet project will reach its goals?

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

2. I have been given the proper resources to complete my tasks on the SupportNet project.

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

3. I believe everyone knows their specific duties who work on the SupportNet project.

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

4. Everyone is accomplishing their duties who work on the SupportNet project.

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

5. I am accomplishing my responsibilities pertaining to the SupportNet project.

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

6. I have encountered few barriers in reference to the SupportNet project.

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

7. I believe that my roles on the project are important.

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

8. I believe that I am responsive to suggestions from other team members.

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

9. I listen to input from my superiors and my peers.

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

10. I believe that my input is valuable.

Strongly Disagree Moderately Disagree Slightly Disagree Slightly Agree Moderately Agree Strongly Agree

SupportNet Staff Process Evaluation Open-Ended Questions

The following questions are part of the ongoing internal process evaluation for the Trauma, Health, and Hazards Center SupportNet project. Please answer each question honestly and to the best of your ability or to the best of your knowledge. Please be as complete as you can in your explanations. Your answers are confidential and will only be shared with the evaluation team which is independent of the SupportNet team. Individual answers will be consolidated statistically and reported to the SupportNet team. The purpose of these questions is to detail the working of the SupportNet team and to understand what roles are present and how each member views the current project and its execution. Please do not discuss this questionnaire with any of your peers until all data has been collected.

What are the goals of the SupportNet project?

What primary and secondary groups will be affected/impacted by the outcome of the SupportNet project? How?

What do you see to be the major strengths of the SupportNet project (weakness)?

Do you think that the SupportNet project will reach its goals? Why or why not?

How would you improve the SupportNet project?

What barriers have been encountered in respect to the SupportNet project so far?

What are your roles on the SupportNet project (Primary and secondary)?

Who works with you on the SupportNet project?
What are their roles?

What information was not addressed within this questionnaire that should have been?

<u>Demographics information</u>
Please indicate your selection using the Word highlighter function.
Which category below describes your age?
18-20
21-29
30-39
40-49
50-59
60-69
70 or older
Gender
Male
Female

Which of the following best describes your current occupation (role?)?

Case Manager
Counselor
General practitioner or medical doctor
Medical Nurse
Mental Health Nurse
Other (please specify :)
Project Director
Psychiatrist
Psychologist
Research Assistant
Research Director
Social Worker

Which best describes your race/ethnicity (may choose more than one)

African-American/Black
Asian or Pacific Islander
European-American/White
Latin-American/Hispanic
Native American
Other (please specify)

What is the highest degree of education you have received?

High School
Associates degree
Bachelor's degree
Master's degree
Doctorate

What education or training have you received related to trauma treatment (check all that apply)?

Completed at least one Trauma training course or workshop
Completed multiple Trauma training courses and/or workshops (at least 3)
Certified in Trauma treatment
Master's degree with specialization in Trauma
Doctorate degree with specialization in Trauma
None

Have you ever served in the military? If yes, in what capacity and for how long?

How long have you been working on the SupportNet project?

When will your work on the SupportNet project end?

Thank you for your time.

Appendix B

Process Evaluation Open-Ended Responses (December 2012)

1. ***What are the goals of the SupportNet project?***
   - Reduce/prevent job burnout and STS in military mental health providers (4).
   - Develop intervention and test its effectiveness (4)
   - Research work engagement and secondary traumatic growth (1)
   - Summary: Team members appear to be in agreement and have a clear picture of the goals of the project.

2. ***What primary and secondary groups will be affected/impacted by the outcome of the SupportNet project? How?***
   - Primary group impacted:
     - Military mental health providers (4)
   - How?
     - Outcome of project may assist this primary group by teaching them skills to prevent the development of STS and job burnout through increasing work/life balance, work engagement, social support, and coping self-efficacy. (1)
   - Secondary group impacted:
     - All mental health providers (2)
     - Family members and leadership working with MMHP (1)
     - Researchers will benefit from increased knowledge (1)

3. ***What do you see as the major strengths and weaknesses of the SupportNet project?***
   - Strengths:
     - The people involved in the project / the team members! (3)
     - Knowledge, experience, expertise in various areas (3)
     - Research and Clinical expertise (2)
     - Solid empirical and theoretical basis for intervention (1)
   - Weaknesses:
     - Challenges of working with the military as an outsider, and resistance to the project by military leadership. (2)
     - Organizational demands without necessary resources, and the organizational climate makes progress difficult. (1)
     - Omitted (1)
   - Summary: Team members agree that the team members bring different expertise to the project and collaborate with each other as a strength of the project. The challenges of working with the military are cited as a weakness.

4. ***Do you think the SN project will reach its goals? Why or why not?***
   - Yes, because of contributions of the strong team of people involved. (2)
   - Yes, the team will meet many of its goals. We have a lot of goals we are striving for, and as part of the process of such an effort, some goals may need to be prioritized over others and some goals may be omitted because of conflict with higher priority goals. (1)

- "I hope so." (1)
- Summary: All team members are in agreement (albeit a qualified agreement) that SupportNet will reach its goals.

5. ***How would you improve the SN project?***
   - Communication among team members could be improved. (2)
   - Clarify specific tasks and deadlines, and work toward making the design elements clear and concrete. (1)
   - More time and money. (1)
   - It would be improved if we had stronger support from inside Fort Carson. (1)

6. ***What barriers have been encountered so far?***
   - Lack of support from Fort Carson (3)
     - Leadership changes at Fort Carson which requires obtaining buy-in from each new leader. (1)
   - Organizational processes have delayed the project unnecessarily. (1)
   - Changes in team members. (1)
   - For the technology portion of the intervention, there was the change from using an outside company to using in-house resources.
   - Deciding which aspects of the intervention are necessary and which can be cut. (1)

7. ***What are your roles on the SN project? Primary and secondary?***
   - All team members seemed clear as to his or her own role.

8. ***Who works with you? What are their roles?***
   - Everyone (did not specify individuals or individual roles). (2)
   - Clearly specified roles of 5 key team members (1).
   - Clearly specified roles of those who worked with closely. (1)
   - Summary: May benefit from more interaction, more experience with all team members so understand everyone's role and their skill sets.

Appendix C

Process Evaluation #2 Open-Ended Responses (September 2013)

1. What are the goals of the SupportNet project?

Burnout and STS in MHP

1. Learning (aka research) (7)
2. Development (aka clinical or tech) (4)
3. Treatment Delivery (5)

Intervention

1. Learning (aka research) (4)
2. Development (aka clinical or tech) (3)
3. Treatment Delivery (2)

Work Engagement and Secondary Traumatic Growth

1. Learning (aka research) (3)
2. Development (aka clinical or tech) (2)
3. Treatment Delivery (2)

Tone:

- Positive (0)
- Negative (0)
- Ambivalent (9)

Summary:

- Team members seem to be in agreement of certain themes more than others.
- Some team members' responses were consistent with goals of their respective team.

2. What primary and secondary groups will be affected/impacted by the outcome of the SupportNet project? How?

Primary

- Mental Health Providers (4)
- Military Mental Health Providers (5)

How!?

- Increase work engagement (1)
- Reduce burnout (2)
- Increase self-efficacy (2)
- Facilitate social support (2)

Secondary

- Clients of MHPs (5)
- Mental Health Providers (2)
- UCCS Team (1)
- Anyone experiencing STS and burnout (1)
- Public Policy for Mental Health Providers (1)
- Researchers (1)

- Behavioral Health Organizations (1)
- Providers' Support System (1)
- Management (1)

Tone:

- Positive (1)
- Negative (0)
- Ambivalent (8)

3. What do you see to be the major strengths of the SupportNet project (weakness)?

Strengths:

- Team (17)
  - Teamwork (1)
  - Experience (2)
  - Skills (2)
  - Strong leadership (1)
  - Knowledge (1)
  - Quality (2)
  - Communication (1)
  - Organization (2)
- Intervention (6)
  - Empirically-based theory (2)
  - Empirically-based design (1)
  - Empirically-based development (1)
  - Technology (2)

Weaknesses

- None (2)
- Size (1)
- Cohesion (1)
- University organizational structure (1)
- Military support (4)
- Time (2)
- Singular theoretical orientation (1)

Tone:

- Positive (3)
- Negative (2)
- Ambivalent (4)

Summary:

- Empirically there are far more positive strengths; however, there are weaknesses that have been brought to light. Some people expressed their concerns that the weaknesses might be problematic.

- While there were clearly more strengths than weaknesses, weaknesses were primarily idiosyncratic (aside from military support)

4. Do you think that the SupportNet project will reach its goals? Why or why not?

- Yes!! (9)
    - Because the quality of the team (7)
        - Experience (1)
        - Motivation and hardwork (4)
    - Because quality of development (3)
        - Clear vision (1)
        - Detailed (1)
        - Empirically driven (1)
    - Because strong IT platform (1)
    - Because we will learn about burnout and STS (1)

Tone:

- Positive (7)
- Ambivalent (2)
- Negative (0)

Summary:

- Tone is far more positive here than in comparison with the other questions containing more ambivalent tones.

5. How would you improve the SupportNet project?

- None! (2)
- More resources to better the intervention (7)
    - Time (2)
    - Money (3)
    - Technology (1)
- Distractions (2)
    - Limit Jokes (1)
- Fewer Meetings (1)
- Incorporate key military into team (1)

Tone:

- Positive (2)
- Negative (0)
- Ambivalent (7)

6. What barriers have been encountered in respect to the SupportNet project so far?

- Nothing much! (1)
- External Sources (6)
    - Lack of Support from Fort Carson (3)
    - Contract Delays (1)

    - IRB Responsiveness (1)
- Resources (4)
    - Time (2)
- Decision-making (1)
- Scheduling Meetings (1)
- Participant Recruitment (1)

Tone:

- Positive (2)
- Negative (3)
- Ambivalent (4)

7. ***What are your roles on the SupportNet project (Primary and secondary)?***
    - Team members seemed clear as to his or her own role (8)
    - Not answered (1)

8. ***Who works with you on the SupportNet project? What are their roles?***
    - Perception of behavior on project is devoted to primary function (2)
    - Perception of behavior on project is balanced between primary and secondary functions (3)
    - Perception of behavior on project is general and spread across different functions and domains (2)
    - Everyone (1)
    - Not answered (1)

9. ***What information was not addressed within this questionnaire that should have been?***
    - Growth from working on the project (1)

Appendix D

SupportNet Satisfaction Inventory

A. Looking back on your experience using the SupportNet system and coaching sessions, please indicate the extent to which you agree or disagree with the following statements:

Strongly Disagree Disagree Mildly Disagree Mildly Agree Agree Strongly Agree N/A

1. Overall, I felt satisfied with the SupportNet system.
2. The SupportNet system met my expectations.
3. I found SupportNet easy to use.
4. Overall, I found the site engaging.
5. SupportNet helped me to build or improve my professional relationships.
6. SupportNet required too much of my time.*
7. Using SupportNet improved my confidence in my ability to cope with work stress.
8. I felt the coach understood me.
9. I felt the coach and I had a respectful relationship.
10. The coach and I worked on what I wanted to work on.
11. I felt the coach and I had a good connection.
12. Overall, the coaching was helpful.

Note: *Reverse scored item

B. Please answer the following open-ended questions with as much detail as possible:

1. In what ways did you find the SupportNet website useful? How could the website be improved?

2. In what ways did you find the coaching helpful? How could the coaching be improved?

Appendix E

SupportNet Satisfaction Inventory Qualitative Responses

1a. In what ways did you find the SupportNet website useful? (7)

Usability (1)

- "Easy to use."

Enhanced Self-Care (4)

- "Learned new techniques and to take time for myself."
- "Good ideas in the Take 5 section to use during the day"
- "The site was very useful in motivating me to work on a better life balance…"

Provided Resources (1)

- "Self assessment, resources were good."

Coaching (2)

- "During this coaching period, I had a death of a parent, I did find the coaching helpful and the strategies for avoiding burnout, I took it to my personal life and found it very helpful."
- "I knew all the resources... did not need them. sorry. The theraeutoic (sic) alliance between the coach and I was the number one thing that provided assist to me."

▪ Specific Website Modules Mentioned (4)

1. Resources/Resource Room (1)
2. Life Balance (1)
3. Self-Assessments (1)
4. Take-5 (1)

1b. How could the website be improved? (4)

Usability (1)

- "I could not figure out how to use it, how to network or if I was supposed to be contacted by a coach."

Address Technical Issues (1)

- "My coach's profile picture was never displayed. I could not successfully printout from various computers the life balance wheel. I had to reenter data several times on the life balance wheel, as it was somehow lost, after saving it."

Resources/Content (2)

- "I knew all the resources... did not need them."
- "I was really excited about reading the articles and accessing those resources. However, all you could get from the program was the abstract. Overall, I found this very disappointing as I like to be able to reference the tools that are being utilized."

Unsure (1)

2a. In what ways did you find the coaching helpful? (7)

Supportive (2)

- "Support."

Listening/Human Interaction (3)

- "listening was the best."
- "There is no substitute for accurate empathic listening."
- "I enjoyed talking with ____ and discussing a few cases…"

Helpful with Goal Attainment (2)

- "My coach was very supportive, helpful, and motivational in assisting me toward achieving the goals I set for myself."
- "Checking in each week was helpful in keeping me working toward my goal."

Informative (2)

- "The coaching was outstanding and I learned a lot from my coach."
- "Coaching was excellent, very useful to see* the distance between thinking and doing."

2b. How could the coaching be improved? (0)

No Suggestions Provided

What important things did you feel were missing from the SupportNet website?

- "maybe I am to (sic) old. But I am on a MHS comuter (sic) all day, why the hell would I want to go it when I get home?"
- "Perhaps a more improved contact area, i.e. a chat room, more uploaded pictures on the profiles of participants and coaches."
- "I think it was adequate and a good starting point."
- "Articles. Actual resources that I could apply on my own."

Please tell us which part of the website you found the most helpful.

- Life-Balance Wheel (4)
- Goal-Setting (2)
- Resource Room (1)
- Self-Assessment (1)

Please tell us what you most dislike about the website.

- "It was not very intuitive, printing challenges, data loss."
- "Locked *out* and resetti*ng password not** *easy"
- "Adding/editing goals was not so easy."
- "It's not the website---its computers in general."
- "Not clear cut what to do. I couldn't initiate anything relevant for me. I was hoping it would be an intervention I could use since things have been getting worse but I was unable to figure it out."
- "The social support area. I am not interested in that; it reminded me of facebook.

Appendix F

Descriptive Statistics for SupportNet Website Questions

Item	*M*	*SD*	Min	Max	*n*
1. I gained something positive from working on Goal Setting	3.77	1.24	1	5	1
2. I gained something positive from working on Self-Assessment.	4	1.12	1	5	1
3. I gained something positive from working on Resource Room	3.15	1.28	1	5	1
4. I gained something positive from working on Social Networking	2.54	.88	1	4	1
5. Goal Setting component was user friendly.	3.75	.87	2	5	1
6. Self-Assessment component was user friendly.	3.82	.87	2	5	1
7. Resource Room component was user friendly.	3.91	.83	2	5	1
8. Social Networking component was user friendly	4	.98	2	5	1
9. I believe that I am more able to deal with things in my life because of what I learned from the Goal Setting component.	3	.79	2	4	1
10. I believe that I am more able to deal with things in my life because of what I learned from the Self-Assessment component.	3.33	.78	2	4	1
10. I believe that I am more able to deal with things in my life because of what I learned from the Resource Room component.	3.08	.67	2	4	1
11. I believe that I am more able to deal with things in my life because of what I learned from the Social Networking component.	2.83	.72	2	4	1
12. I would recommend the Goal Setting to other BHPs.	3.58	.9	2	5	
13. I would recommend the Self-Assessment component to other BHPs.	3.58	.9	2	5	
14. I would recommend the SupportNet resource room component to other BHPs.	3.75	1.06	2	5	
15. I would recommend the Social Networking component to other BHPs.	3.33	.89	2	5	
16. The Goal Setting addressed many of my needs and concerns.	3.25	.97	2	5	
17. The Self-Assessment component addressed many of my needs and concerns.	3.5	.9	2	5	
18. The Resource Room component addressed many of my needs and concerns.	3	.95	1	4	
19. The Social Networking component addressed many of my needs and concerns.	2.67	.78	1	4	
20. I feel that my awareness of secondary traumatic stress has increased since I started using the SupportNet website.	4.71	1.38	2	7	
21. I feel that my awareness of job burnout has increased since I started using the SupportNet website.	4.79	1.37	2	7	
22. I feel that the quality of self-care activities has increased since I started using the SupportNet website.	5.14	1.35	3	7	
23. I feel that the quality of social support around me has increased since I started using the SupportNet website.	4.29	1.44	2	7	
24. I feel that I am more capable of coping with work stress than before I started using the SupportNet website.	4.43	1.22	2	7	
25. I feel that I spend more time on self-care activities than before I started using the SupportNet website.	4.5	1.51	2	7	

Note. All mean scores are based on a 5-point Likert-type scale with higher numbers indicating greater agreement (1= *Strongly Disagree* to 5 = *Strongly Agree*). BHPs = Behavioral healthcare providers.

Appendix XVI: International Society for Traumatic Stress Studies Paper on Secondary Traumatic Stress among Army Mental Health Providers.

Secondary Trauma in Military Mental Health Providers

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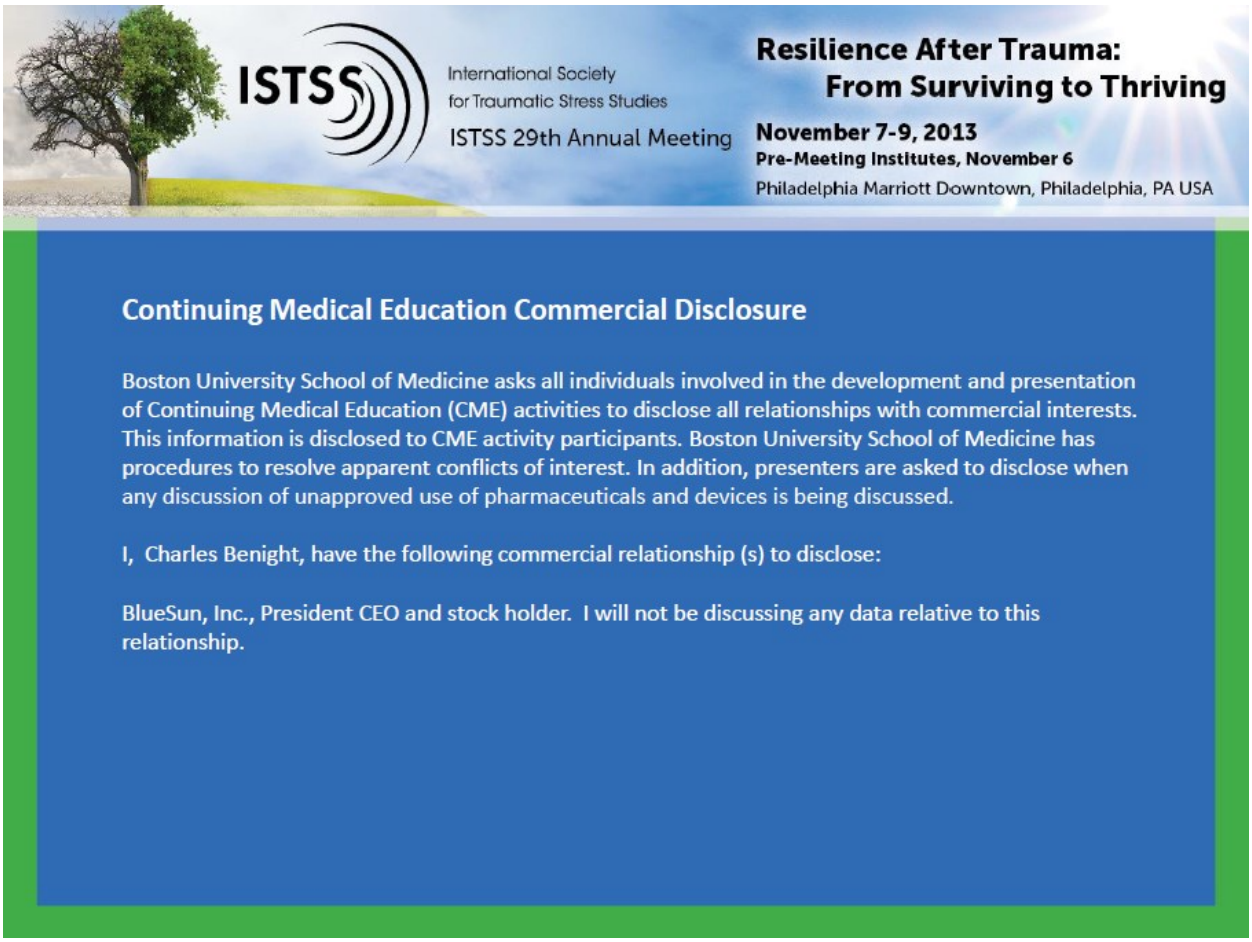
Director CU: Trauma, Health, & Hazards Center
University of Colorado Colorado Springs

This presentation was made possible by a research grant awarded to Charles C. Benight and administered by the U.S. Army Medical Research & Materiel Command (USAMRMC) and the Telemedicine & Advanced Technology Research Center (TATRC) at Fort Detrick, MD under Contract Number W81XWH-11-2-0153.

Sincere thanks to the hospital command and behavioral health department at Fort Caron.


ISTSS
International Society
for Traumatic Stress Studies
ISTSS 29th Annual Meeting
Resilience After Trauma:
From Surviving to Thriving
November 7-9, 2013
Pre-Meeting Institutes, November 6
Philadelphia Marriott Downtown, Philadelphia, PA USA
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BlueSun, Inc., President CEO and stock holder. I will not be discussing any data relative to this relationship.

Research Team

- Dr. Roman Cieslak
- Dr. Kotaro Shoji
- Dr. Valerie Anderson
- Dr. Judith Bock
- Dr. Fred Gibson
- Dr. Bret Moore
- Dr. Alan Peterson

Overview of Problem

- No available information on secondary traumatic stress prevalence estimates in military mental health providers.
- The Department of Veterans Affairs has observed a huge increase in the number of patients with PTSD receiving behavioral health services, from 139,062 in 1997 to 279,256 in 2005 (Rosenheck and Fontana, 2007).

Overview of Problem

- Over 1.6 million troops have been deployed in Iraq and Afghanistan. Approximately 10 to 14% will be diagnosed with PTSD.
- More than 60,000 troops have done 3 or more tours.
- Approximately, 31,882 and 6,773 have been reported as wounded in action in OIF and OEF, respectively.

THE MENTAL HEALTH DEMAND IS BEYOND COMPARE.

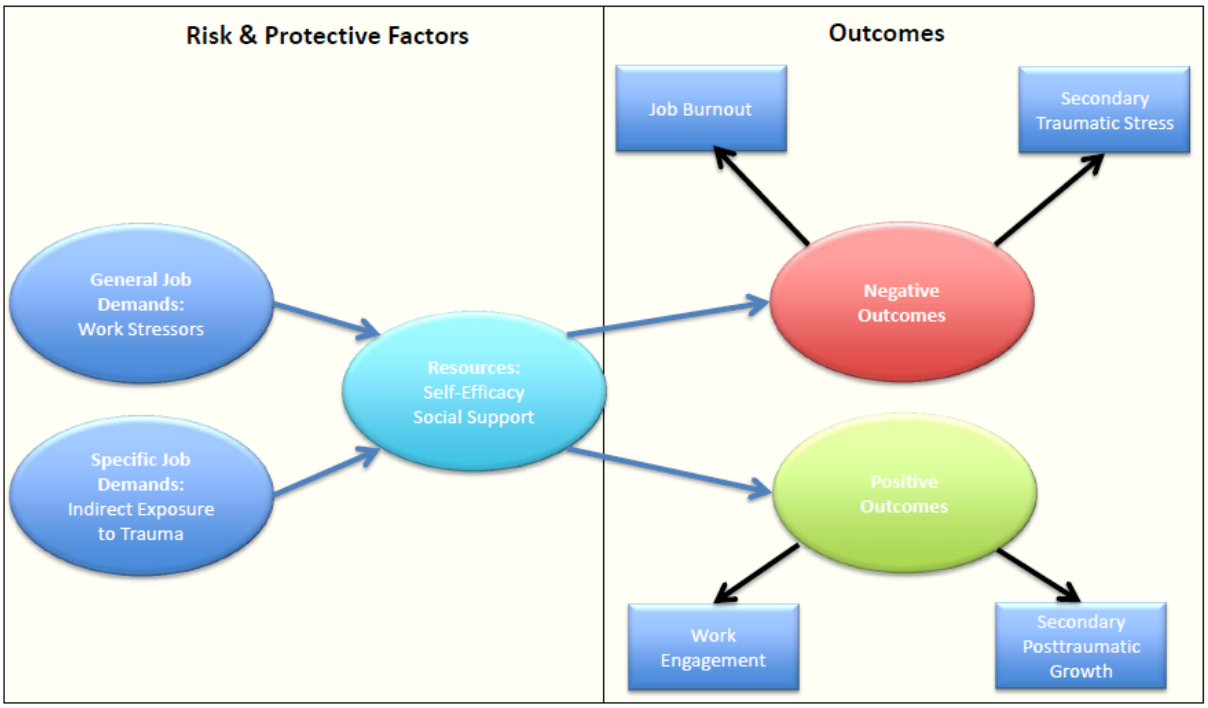
Overview: PTSD-like diagnosis of Secondary Traumatic Stress met by:

- 15.2% of social workers (Bride, 2007).
- 19% of substance abuse counselors (Bride et al., 2009).
- 20.8% of providers treating family or sexual violence (Choi, 2011a).
- 32.8% of emergency nurses (Dominguez-Gomez and
- Rutledge, 2009).
- 34% of child protective services workers (Bride et al., 2007).
- 39% of juvenile justice education workers (Smith Hatcher et al., 2011).

Support Net Project: Research Aims

- **Aim 1**: Determine the current level of secondary trauma, burnout and work engagement in military mental health providers.
- **Aim 2**: Evaluate the utility of social cognitive theory as a framework for understanding the stress process for military mental health providers.

Theoretical Model: SupportNet Study



Procedure

- Data were collected by means of an online survey. An e-mail with information about the SupportNet study and a link to the survey was sent to on-post and off-post behavioral health providers working with military patients.
- Off-post providers received an invitation to the study through an online newsletter sent by TriWest Healthcare Alliance.
- The on-post providers were contacted by e-mail sent by the director of the Department of Behavioral Health at Evans Army Community Hospital at Fort Carson, CO and by the Psychology Consultant to the U.S. Army Surgeon General.

Participants

- Of 339 participants 224 (66%) met the inclusion criteria (working at least one year as a clinical psychologist, counselor, or social worker; providing services for a military population; and being indirectly exposed to trauma through work with patients).
- Slightly more than half of the sample was serving as on-post (57%) and the rest as off-post (43%) behavioral health providers.
- Equally split between those who did and did not have any military experience (44% and 56%, respectively).
- 19% had deployed to a combat zone at least once.
- The average age was 48.92 (*SD* = 13.04) years and the average length of work experience was 16.40 (*SD* = 10.42) years.
- The participants were predominantly women (67%)

Therapy Orientations

- 90% Cognitive Behavioral Therapy
- 42% Cognitive Processing Therapy
- 30% Prolonged Exposure
- 29% Eye Movement Desensitization and Reprocessing

Indirect and Direct Trauma Exposure

- ***Indirect Exposure and Appraisal of the impact of indirect exposure***. Participants were asked to assess how hearing about each checked event in the STES affected them. The responses are given on a 1 to 7 scale (from "Very Negative" through "Neutral" to "Very Positive").
- **Direct Exposure**: List of 10 potentially traumatic events included in the STES: "How many of the types of traumatic events listed above have you personally experienced?" (scale from 0 to 10).

Secondary Traumatic Stress & Burnout

- **Secondary Traumatic Stress Scale** (Bride et al., 2004). 17-items that match the list of symptoms corresponds to the B, C, and D diagnostic criteria for PTSD specified in the *DSM-IV-TR*. Responses were given on a 1 to 5 scale (from "Never" to "Very Often").
- **Oldenberg Burnout Inventory**. Assesses cognitive and physical components of exhaustion.

Work characteristics and professional support.

- Primary occupational role (clinical psychologist, counselor, psychotherapist, or social worker), therapeutic approaches used in work with clients (CBT, CPT, PE, EMDR).
- Employment status (part-time, full time).
- Years of work experience as a mental health provider.
- The exact number of hours of individual and group supervision received monthly, and frequency of professional peer support (scale 1–7: Never; A few days in a year; One day a month; A few days a month; One day a week; A few days a week; Every day).
- Workload in the last month: constrained by (1) having too much paperwork and (2) having too many patients (scale 1–5: Less than once per month or never; Once or twice per month; Once or twice per week; Once or twice per day; Several times per day).

Findings and Implications

Frequency and Percentage of Behavioral Health Providers Meeting Diagnostic Criteria for Secondary Traumatic Stress Criteria Due to an Indirect Trauma Exposure through a Practice with Traumatized Military Patients

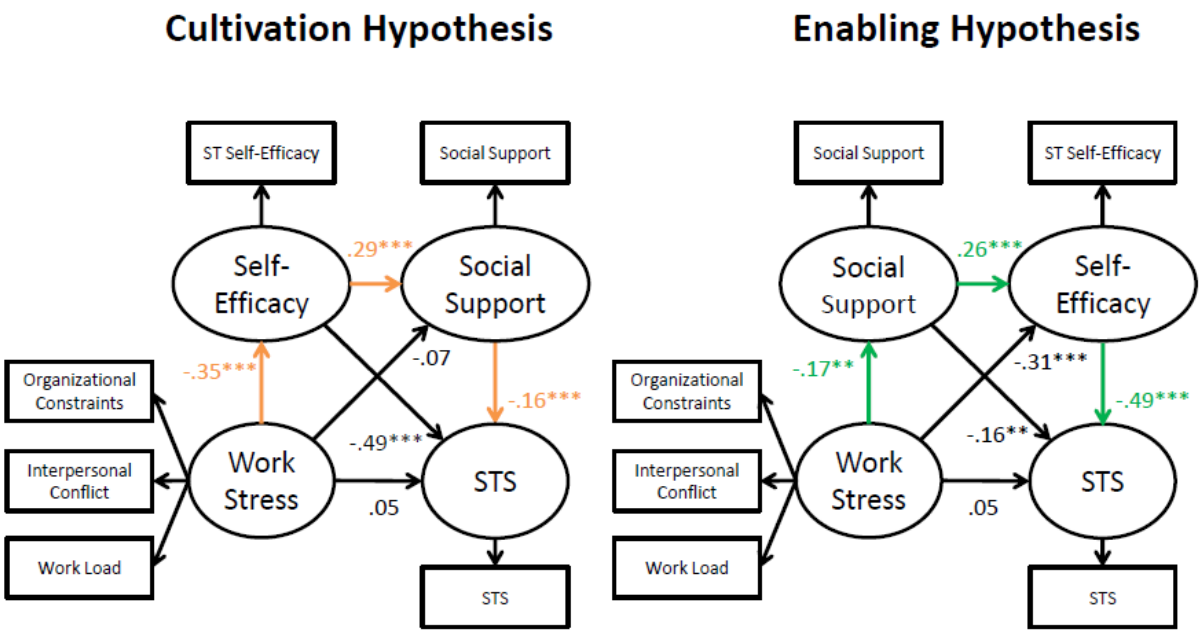
Criteria	*n*	%
None criteria met	76	33.9
Criterion B: Intrusion	129	57.6
Criterion C: Avoidance	67	29.9
Criterion D: Arousal	79	35.3
Criteria B and C	53	23.7
Criteria B and D	66	29.5
Criteria C and D	51	22.8
Criteria B, C, and D	43	19.2

Correlates of STS

- STS correlated significantly with:
  - Too much paperwork (r = .23).
  - Too many patients. (r = .35)
  - Direct exposure to trauma (r = .21)
  - Indirect exposure ratio of trauma patients (r = -.14)
  - Appraisal of indirect exposure (r = -.37).

Next Steps: Mechanism Analysis

Cultivation and Enabling Hypotheses



CFI = .985, RMSEA = .055, SRMR = .039

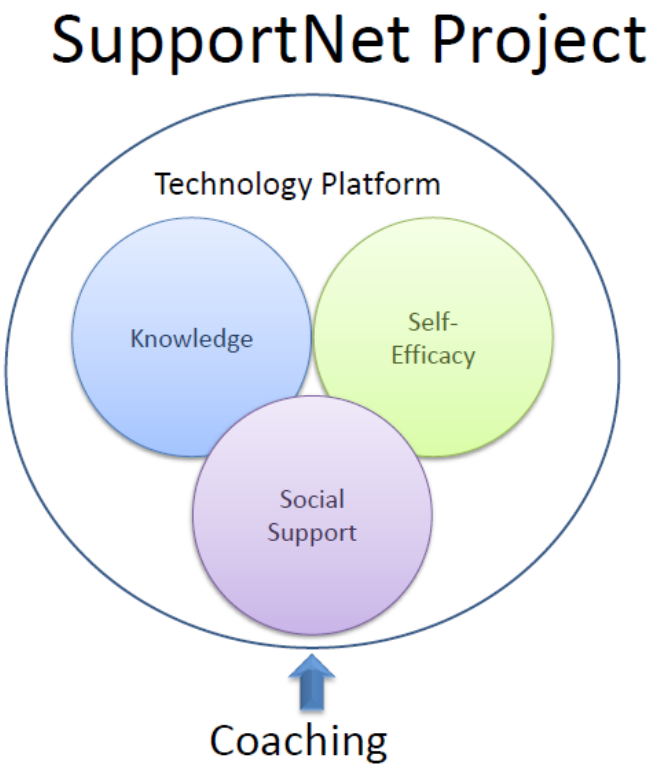
Discussion

- STS levels with all major criteria in this sample were significant (19%). Similar to other health providers.
- Several important workplace correlates including appraisal of the indirect exposure, amount of direct exposure, paperwork level, and patient load.
- Mechanisms between demands, resources, and negative outcomes must be determined. Self-efficacy and social support may play key roles.

Interventions

- Implications for supportive interventions that reduce work related demands and increase interpersonal and intrapersonal resources.
- No RCT data exists for military mental health provider secondary trauma/burnout interventions

SupportNet Project: Intervention Phase


SupportNet Project
Technology Platform
Knowledge
Self-
Efficacy
Social
Support
Coaching

Caregivers Need Evidenced Based Support Too…

Appendix XVII: CONSORT Flow Chart for the SupportNet RCT

SupportNet RCT CONSORT Flow Chart